

NAVAL POSTGRADUATE SCHOOL MONTEREY, CALIFORNIA



THESIS

U.S. MARINE CORPS STRATEGIC CAMPAIGN
PLAN FOR IMPLEMENTATION OF
ELECTRONIC COMMERCE/ELECTRONIC
DATA INTERCHANGE (EC/EDI)

by

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June 1996

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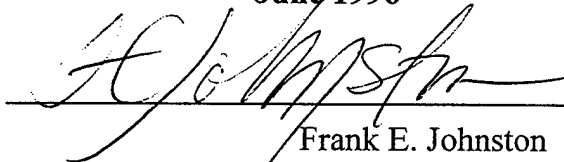
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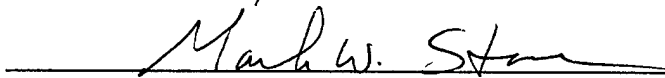
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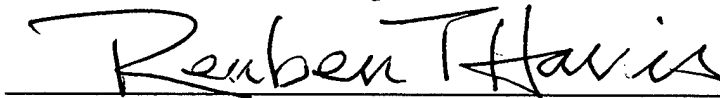
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ABSTRACT

The focus of this research is to examine the Electronic Commerce/Electronic Data Interchange (EC/EDI) implementation plans within the Marine Corps and its various procurement offices. The primary intent is to evaluate the plan and determine if the Marine Corps can meet the Presidential Mandate that agencies adopt EC/EDI by 1997. This research analyzes, compares, and contrasts the plan to commercial EC/EDI implementation practices. Additionally, this thesis identifies the obstacles and virtues of the Corps' EC/EDI implementation plan. Finally, recommendations and improvements to the Marine Corps EC/EDI implementation plan, if needed, are offered.

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I. INTRODUCTION

Electronic Commerce (EC) and Electronic Data Interchange (EDI) are alternative electronic methods which businesses and Government use to conduct various day-to-day operations. Purchase orders, invoices, letters, correspondence, and advertising are just a few examples of current EC/EDI capabilities. These new computer-based systems are creating a new electronic procurement cycle. EC/EDI transforms the paper-based procurement paradigm to an electronic-based paradigm. Industry is re-engineering their operations in order to capitalize on EC/EDI technology. Generally, firms realize lower procurement costs, increased service and response time, and decreased procurement lead time. Thus, in many respects, EDI, has been viewed as a "competitive advantage" vehicle. The desire to gain a competitive or strategic advantage through price, quality, or service, real or imagined, has been a major driving force for the enduring and continued growth of EDI.

On October 26, 1993, President Clinton mandated EC/EDI usage for all Federal Government purchases after 1997. The Department of Defense (DOD) aggressively lead the conversion to EC/EDI. An EC/EDI office was formed and the responsibilities of EC/EDI were assigned to Deputy Under Secretary of Defense for Acquisition Reform (DUSD(AR)), Ms. Colleen Preston. At the request of Ms. Preston, a DOD Process Action Team (PAT) was formed to determine the application of EC/EDI within DOD. This report has evolved into DOD's EC/EDI implementation plan. The Marine Corps has attempted to follow behind DOD's lead and the other Services.

The focus of this research is to evaluate whether the Marine Corps' implementation of EC/EDI has achieved the desired goals and objectives in order to accomplish the 1997 EC/EDI Presidential Mandate. This evaluation is accomplished

by examining the implementation plan throughout the Marine Corps. It also provides an in-depth study of how the plan is being implemented at the various contracting activities under the control of the Field Contracting Support Branch (LBO) Headquarters, Marine Corps (HQMC). The investigation also studies the implementation of EC/EDI and its effect on the contracting offices, focusing on obstacles, drawbacks, and virtues of the plan. Finally, recommendations and improvements to the Marine Corps' plan, if needed, are made based upon private industry EC/EDI implementation practices.

A. OBJECTIVES

The objectives of this research involve identifying and analyzing the U.S. Marine Corps EC/EDI implementation plan. It looks at industry examples and literature of successful EC/EDI implementation models and apply/compare such lessons toward the Marine Corps EC/EDI implementation model. Any changes or recommendations to the Marine Corps EC/EDI implementation plan, if needed, are designed to make the transition from a paper-based paradigm to an EC/EDI-based paradigm successful for both the Marine Corps and its vendor base.

B. RESEARCH QUESTION

1. Primary Research Question

What are the obstacles the Marine Corps faces in its implementation of EC/EDI and what plans can be made to successfully manage the implementation of EC/EDI in order to accomplish the 1997 EC/EDI Presidential Mandate?

2. Subsidiary Questions

1. What is EC/EDI?
2. What are successful indicators or models associated with industry's EC/EDI implementation efforts?

3. What is required to conduct EC/EDI within the Marine Corps?
4. What is the implementation plan and current status of EC/EDI within the Marine Corps?
5. What is necessary for the Marine Corps to implement, manage, conduct, and abide with the 1997 EC/EDI Presidential Mandate?

C. METHODOLOGY

The methodology of this research includes an extensive EC/EDI literature search, EC/EDI industry examples and usage, and lessons learned in the implementation of EC/EDI. Interviews were conducted with numerous private, DOD, and USMC officials by phone, in person, or through e-mail correspondence. This group included individuals at the Office of the Secretary of Defense (OSD), Secretary for Acquisition Reform, Department of the Army (SARDA), Headquarters Marine Corps (HQMC), and progressed down to the installation level.

A comprehensive literature search for contemporary EC/EDI articles was accomplished. The review of various data bases and sources of potential EC/EDI material included: 1) Defense Technical information Center (DTIC), 2) Defense Logistics Studies Information Exchange (DLSIE), 3) Lexus-Nexus, 4) computer/electronic publications, 5) EC/EDI publications, 6) internet.

A formal research survey was also conducted based, in part, on Robert M. Monczka's Interview Guides. [Ref. 1:p. 3] The survey was sent to 28 of the Marine Corps contracting offices, Marine Corps Systems Command (MARCORSSYSCOM), LBO, and the EC/EDI Program Manager (PM) located at Logistics, Planning and Policy, System Branch (LPS), HQMC.

D. LIMITATIONS AND ASSUMPTIONS

1. Limitations

This thesis concentrates on a methodical approach to help current USMC EC/EDI implementation efforts. Because of this focus, research is limited to the plans, policy, personnel, and management of EC/EDI implementation issues. The intent of the research is to look at industry examples and literature of successful EC/EDI programs and apply/compare such lessons toward the Marine Corps EC/EDI implementation model. Hence many technical, hardware, and software issues of EC/EDI are not addressed. Another limitation is the small number of contracting offices, 28, and an even lower number of responses to the survey, 15. Therefore surveys were used in a qualitative manner, as a trend or attitude indicator, instead of more rigorous quantitative manner. Lastly, any suggestions or recommendations must be able to work within both the USMC parameter as well as the current DOD environment.

2. Assumptions

Although later chapters of this thesis discuss EC/EDI concepts, the reader is assumed to understand basic EC/EDI fundamentals and contracting processes. Additional familiarity of the Federal Acquisition Regulation (FAR) is another built in assumption. Lastly, a basic understanding of DOD and USMC structure, activities, and missions is required.

E. ORGANIZATION OF THE STUDY

This research is organized into seven chapters. Chapter I provides an introduction to the origins and objectives of this study. Chapter II provides a commercial EC/EDI model as a benchmark for comparison to the Marine Corps implementation model. A historical context of EC/EDI, contained in Chapter III, is required to understand the general issues and progression associated with USMC

efforts in EC/EDI. Chapter IV presents industry's successful indicators for EC/EDI implementation efforts. Comparing and contrasting the identified successful indicators with the current USMC EC/EDI model follows in Chapter V. Chapter VI recommends improvements to or development of a USMC strategic campaign plan based upon successful implementation concepts. Lastly, Chapter VII includes a conclusion and proposes areas of further study.

II. CONCEPTUAL EC/EDI MODEL

EDI implementation methods have been documented over the past 20 years. Monczka and Carter, in particular, have developed a model that illustrates the requirements for successful EDI implementation. [Ref. 1:p. 15] The model and its associated check list appear in Appendix A. As indicated in the model there are several cross functional areas that must be coordinated and managed. In the private sector, Monczka's model would be an ideal reference in planning for EDI implementation. This research, however, focuses on a different problem; DOD and U.S. Marine Corps implementation. As such, the model must be adapted to fit within the Marine Corps framework. A recent study by Cats-Baril and Thompson confirms the inherent differences between the public and private sectors where technological change occurs:

1. Given the greater interdependence across organizational boundaries, the need for clear project goals, leadership, and specific responsibilities is increased.
2. Given the turnover of top level administrators and the constraints imposed by red tape, the need to convince employees to change the existing organizational processes is greater and the difficulty to implement change is increased.
3. Given the incremental nature of governmental decision making, the criteria to justify radical technological innovations are more stringent.
4. Given that Management Information Systems (MIS) directors tend to have less authority than their private sector counterparts, the careful choosing of a project leader with both technical knowledge and political clout is essential. [Ref. 2:pp. 559-566]

Furthermore, it is generally accepted that private industry is much more flexible and responsive to market or customer demands. Public organizations exhibit

greater cautiousness, rigidity, and less innovation. [Ref. 3:p. 5] Decision making autonomy and flexibility of the manager is limited as compared to his private counterpart. [Ref. 3:p. 62] For instance funding for EDI implementation in private industry is far easier than the DOD congressional budgeting process required for EDI within DOD and the Federal Government. Another example that highlights the differences concerns one of the first steps in the EDI model: analyze EDI's opportunity. Monczka states even in large firms within the study, analyzing EDI opportunities should take two people approximately 30 days. DOD's evaluation required nine process action team advisors, 27 process action team members, and countless others in support during its 60 day evaluation process. [Ref. 4:pp. xxix-xxxv] Another difference between industry and Government concerns profit incentives.

Industry differs from the public sector in a significant way; private firms are motivated to make a profit for its owners. The public sector is not concerned with reducing costs because savings are not directly felt on the profit margin. The public sector lacks daily market pressures and competition. [Ref. 3:p. 5] Government bureaus are essentially non-market organizations. This lack of market forces denies the Government an the informational feedback loop, in the form of prices and profits, that benefit private firms. [Ref. 3:p. 12] Typically a disincentive for savings occurs in the public sector. Unobligated budgets, which could represent savings in a new EDI process, are considered bad or acts of poor management in the public sector. A penalty will follow in future budgets of Government agencies which have excess unobligated budgets. Budgeted outlays for future years will automatically be reduced by the amount of unobligated funds left over in EDI savings. Unfortunately, Government employees dislike shrinking operational budgets. [Ref. 5:p. 14]

Government employee positions are also rated on how large an organization is and how large a budget is allocated to it. Hence, there isn't an incentive to size down and become a lean and efficient organization. Efficient operations may mean fewer Government Service (GS) employees with lower ratings. This equates to lower pay and smaller budgets. If anything, there is an incentive to justify growth, larger budgets, and higher rated GS positions. Thus the private sector has a strong profit incentive and motivation to try new more effective and efficient methods, while the public sector has a disincentive for obtaining savings. The National Performance Review (NPR) confirms this viewpoint. Supervisory positions are frequently created as a means of providing Government employees with higher grades. Government employees micromanage to justify their existence adding layer upon layer of management. [Ref. 6:p. 22] Additionally Federal workers rationalize requests for larger staffs and position upgrades on the ever more complex regulation their agencies must enforce. [Ref. 7:p. 2]

Another difference between Government and industry concerns the power of the paycheck and bonus possibilities. In the private sector, an incentive to implement EDI could involve a bonus to employees. Many firms typically give out bonuses to EDI program managers if the EDI implementation can be accomplished in an efficient manner. Two factors private industry often use to determine bonuses are schedule and budget factors. Through the use of bonuses, firms provide incentives to their employees in order to implement EDI on schedule and on budget. The closer EDI implementation is to its schedule and budget targets, the higher the bonus. The evaluation and distribution of bonuses is often a simple process; the project manager or his superior has the authority to disperse bonuses. Some even distribute the project's first year of EDI savings as bonuses to the implementation team members. Bonuses are commonly and quickly used to motivate individuals and performance.

[Ref. 8 :p. 1] A negative incentive also exists in the private sector; employees who do not want to use new EDI tools, can be replaced or fired. In contrast to industry, DOD lacks the flexibility and responsiveness that private firms have in providing incentives or disincentives for their workforce.

Although the Government does have limited merit pay incentives, typically for Senior Executive Service (SES) Government employees, it does not award bonuses to employees as often or as easily as the private sector. [Ref. 9] An individual who forwards a cost saving idea for the DOD's Suggestion Program may receive a small portion of the first year's anticipated savings as an award or bonus. However, in DOD the funding source of the bonus is deducted from the unit's current operations budget. This creates a disincentive to provide individuals with monetary awards because the parent unit must pay for the bonus. Because units may have to divert precious resources to award a suggestion, many suggestions within DOD are typically recognized with a military award such as a Navy Commendation Medal. In order to disperse a monetary award, the Government requires documentation, justification, review and approval by the respective authorities. In order to handle the documentation and award process, an Incentive Award Board was created. Bonuses greater than \$10,000 must also be approved by the Office of Personnel Management and greater than \$25,000 by the President. In many cases the approved bonuses arrive years after the submission of the suggestion, and are often reduced. In reducing bonus awards, boards often cite that the suggestion is a standard process within the office; awards should not be dispersed for an existing process. In this manner, the board often neglects the difference in time and the old process the suggestion replaced. Suggestions often quickly became new office standards due to rapid implementation by managers who seek immediate cost savings for the Government. By the time evaluators look into the merits of the bonus, the suggestion already has been adopted

as an office standard process. [Ref. 9] In this manner, the Government devalues suggestions over time as well as in the actual value of the bonus. Also in contrast to the private sector, the Government makes firing a Government employee a difficult and long process.

Rigid civil service systems hinder removing unproductive workers and providing financial incentives to productive ones. [Ref. 3:p. 62] According to the NPR, Government supervisors view the process for dealing with poor performers as unduly difficult and time consuming. The slowness of the process discouraged some supervisors from taking any serious action against a poor performer. [Ref. 6:p. 39] Work evaluations and fitness reports are tools that can change behavior in the workplace, but time and proper documentation are required in order to fire a Government employee. As one Government employee stated in a visit to a contracting office, "I don't have to use EDI, you can't make me use it, and you can't fire me for not using it." In general, the private sector has the ability to eliminate or re-assign employees who refuse to use new processes such as EDI. Although wrongful termination litigation has forced industry to better document and justify employee firings, private firms continue to have a wider choice of options and can more quickly bypass or re-assign individuals who inhibit business process re-engineering. The Federal Government lacks such options.

Due to the inherent differences between the public and private sector, several parts of Monczka's EC/EDI model need to be removed for it to work within the Government framework. These items are: analyze EDI opportunity, develop cost benefit analysis, develop legal approach, establish support for a standard, establish auditing approach, develop a prototype, stabilize system design and approach. (See Appendix B) The reason for altering the model is twofold.

1. The executive branch and DOD leadership has mandated EC/EDI use. The Marine Corps will implement EC/EDI or face the consequences of non-compliance. Therefore two steps in Monczka's model, analyze EDI opportunity and develop cost benefit analysis, are eliminated. The decision to choose if EDI is applicable or appropriate for the Marine Corps is immaterial and unnecessary. The decision to use EDI has already been made by senior leaders. The Marine Corps must implement EDI.

2. Because the Marine Corps is part of DOD, many items such as the standards issue, have either been addressed or are the responsibility of other Government agencies. The following items in Monczka's model are the responsibility of agencies other than the Marine Corps:

- Develop legal approach - Office of the Secretary of Defense (OSD).
- Establish support for a standard (ANSI X12) - Defense Information Systems Agency (DISA).
- Establish auditing approach - Defense Financial and Accounting Service (DFAS).
- Develop a prototype - Air Force.
- Stabilize system design and approach - Air Force and DISA.

Therefore the Marine Corps model will eliminate these items due to the inability to control and execute these specific items in Monczka's model.

The elimination of such steps, EDI experts such as Monczka may argue, invalidates the implementation of EDI or will ensure its failure. This is certainly not true. The division of such tasks into functional areas does not eliminate the requirements to complete implementation; they are transferred to an agency other than the Marine Corps. This in no way abrogates the responsibility of accomplishing the

tasks indicated by Monczka. As mentioned earlier, it does make implementation more difficult to coordinate as well as lengthen the time necessary to implement. Even if some of these items were left to the Marine Corps, the capability to implement the various steps are not possible due to the lack of expertise in the Marine Corps. For instance, the Marine Corps is no longer involved in the payment and invoicing area; DFAS is accomplishing this task. The organizational structure of DOD prohibits the Marine Corps from executing various steps in Monczka's Model. Therefore the elimination of the various steps is necessary and prudent.

Finally, despite the differences, the revised model is still useful in evaluating the Marine Corps EC/EDI implementation plan. Autonomous divisions in large corporations, similar to the USMC and DOD relationship, also use various forms of Monczka's model. EDI planning occurs on the macro level in large corporations which is then continued or modified at the division levels. EDI authors, industry experts, and researchers such as Hinge, Oravec, Marrman, Goverman, and Sriram also support this concept. Divisions within parent corporations, particularly individual profit centers, conduct independent planning similar to Monczka's model. This is done due to the unique needs and systems of the various divisions. Thus, once the decision to incorporate EC/EDI within the entire corporation is made, the divisions often develop an independent plan to conform to their corporation's desire to implement EC/EDI. The divisions, however, must fit within the framework and guidance of their corporation's EC/EDI plan. Fidelity Investments, for example, has over 30 separate business units each with its own EC strategy. All of Fidelity's business units, however, must develop plans within the capabilities of Fidelity's MIS department. [Ref. 10:p. 3] A transaction standard may be standardized, and respective divisions must work within this standard framework. In this respect, the Marine Corps is no different than standard industry practices.

For the Marine Corps, the EC/EDI implementation model is very similar to its current war fighting philosophy. An executive decision must be made to implement EC/EDI methods. A strategy must then be developed to achieve the goals and objectives of EC/EDI. A campaign plan must evolve in order to meet the strategic goals. Finally tactics must be used to support the campaign objectives. The mission is clear, the objectives are obtainable, and everyone is marching toward the EC/EDI objectives in unison. Conceptually this is warfighting, and it is also EC/EDI implementation.

III. EC/EDI

A. EC/EDI DEFINITIONS

1. What is EC?

EC is the paperless exchange of business information using EDI, Electronic Mail (e-mail), Electronic Bulletin Boards (BBS), Electronic Fund Transfers (EFTS), and other electronic processes and technologies. The Federal Acquisition Regulation (FAR) defines EC as "a paperless process including electronic bulletin boards, electronic funds transfer, electronic data interchange, and similar techniques for accomplishing business transactions. The use of terms commonly associated with paper transactions (e.g., "copy," "document," "page," "sealed envelope" and "stamped") shall not be interpreted to restrict the use of electronic commerce." [Ref. 11]

Thus electronic commerce is the integration of e-mail, EDI, Electronic Source Selection (ESS), bar-coding, Computer Aided Design/Computer Aided Manufacturing (CAD/CAM), FAX, Continuous Acquisition and Life-Cycle Support (CALS) and similar techniques into a comprehensive electronic-based system encompassing all business functions both internal and external to an organization. These functions include purchasing, sales/order entry, production, manufacturing, transportation, and administration. EC is being used by commercial enterprises to establish systems, capabilities, and procedures that improve day-to-day operations. EC is growing rapidly as firms realize gains by providing fast, accurate and low cost exchange of information. [Ref. 12]

One interesting point concerning EC addressed by the FAR definition concerns its relationship to EDI. EDI is a subset of EC, not equal to EC. In the past EDI may have been seen as the sole option of EC methods. This certainly is not the case today,

as technological advances have broadened the scope and breath of EC capabilities. EDI is not equal to EC. EDI is one tool within many EC options. A firm does not conduct EC by merely having the capability to use or conduct EDI transactions. EC is transforming the paper-based paradigm into an electronic paradigm. EDI is but one tool amongst many available within the electronic framework. Changing the paper process into an electronic process that capitalizes on EDI capabilities follows the form, fit, function, and intent of EC initiatives. The all-encompassing definition is not only written into regulation in the FAR, but is supported by the statements and intent of: 1) DUSD Report, 20 December 1993, 2) National Performance Review, September 1993, 3) Presidential Memorandum "Streamlining Procurement through Electronic Commerce," 26 October 1993.

2. What is EDI?

EDI, one component of EC, is the computer to computer transmission of a business document in a standard format. EDI, relatively new to many industries, is generally viewed in two ways: strict and relaxed. Strict interpreters view "computer to computer" transmissions as original-application-programs to processing-application-programs. To purists, EDI consists of business data only. Furthermore, they view standards as formats that have only been approved by a national or international standards organization such as the Data Interchange Standards Association (DISA). A more relaxed interpretation of EDI would include third party intermediary groups, such as Value Added Networks (VANs). This view would also allow business data as well as additional verbiage or free form messages. EDI formats developed by industry groups or individual companies would fall within this relaxed EDI camp. [Ref. 13:p. 77]

Standard EDI documents that businesses exchange are called templates. There are many different industry standards, as well as independent firm standards such as

that of Wal-Mart, each having their own unique requirements. Fortunately, there is a general trend towards consolidation of standards to the ANSI X12 standard from the American National Standard Institute (ANSI). ANSI X12 is the standard for inter-industry electronic interchange of business transactions. This is the current standard adopted for DOD EDI usage. Many EDI experts also predict a future global EDI standard. The basis for the universal standard will evolve from the United Nations EDI For Administrative, Commercial and Trade (EDIFACT) standard. The ANSI X12 committee is aligning the X12 standards to comply with international EDIFACT standards by 1997. [Ref. 14:pp. 4-12]

B. EDI HISTORY AND BACKGROUND

EDI has grown substantially from its birth in the transportation and later petroleum industry. In the 1950s and 60s the high cost and technical barriers of computer to computer exchange of information limited EDI usage to large firms. EDI was well suited for the transportation and oil industry's highly repetitive exchange of information such as purchase orders and shipment information. As the technical and cost barriers decreased with advances in computer capabilities, more firms were willing to use EDI with their trading partners. As the use of EDI greatly expanded amongst various industries, the need and desire for one cross functional, all encompassing EDI standard began to grow. Firms desired to expand EDI usage outside of their specific industry. One EDI standard could expand EDI usage, decrease EDI costs, as well as reduce the technical barriers to EDI. The intent of a single EDI standard was to eliminate the need to create special software, as well as receive or send user-unique data formats. It was envisioned one software package would generate, interpret and exchange information with all EDI trading partners. [Ref. 1:p. 3]

C. EDI STANDARDS

The Petroleum Industry Data Exchange, and the Transportation Data Coordination Committee are examples of early EDI industry standards. These early industry-unique standards, however, greatly limited EDI usage in cross-functional, business-wide applications. ANSI tackled the EDI standardization issue due to pressure and cooperation from various EDI industry groups. From ANSI's efforts, the ANSI XI2 EDI standard was born. Ideally the ANSI XI2 EDI standard would allow any firm or industry the opportunity to transmit information electronically regardless of the hardware or software of each participating firm. Firms not only anticipated transmitting EDI information within their specific industry, but also amongst many other industry groups. Despite ANSI's best intentions, there still are problems associated with EDI standardization. [Ref. 15:p. 17] Due to the necessity of satisfying all of the various industries using EDI, the ANSI XI2 standard is very generic. In some cases there are several options to send the same type of information. In order to accommodate this variance, an additional layer of control called implementation conventions were developed to define the transactions in very clear terms. Implementation conventions refine ANSI transaction sets by defining the standard for data segments, elements, and code values. For example, the invoice ANSI 810 transaction set can be used for invoice, progress payment, and as a voucher depending upon the manner in which the data is displayed. Thus, before firms begin to use EDI, an understanding between the firms must be fully understood in order to be a trading partner. Although EDI has created a general framework and standard for electronic transactions, the industry association still controls the implementation conventions. EDI variability is still present amongst firms and industries.

D. PROBLEMS WITH STANDARDIZATION

An oil executive attending the American Petroleum Institute 1995 EDI Conference in Dallas, 25 September, 1995, announced his company's delay in conforming to the petroleum implementation conventions. The executive's firm, a large U.S. oil company, delayed their action due to the substantial cost required to migrate his old legacy system to a new system capable of accommodating the petroleum implementation convention. Large firms typically find it expensive to convert to EDI conventions due to the high cost of hardware and software conversions. This results in many smaller firms, suppliers to the larger firms, managing and paying for two or more transaction sets such as the invoice 810 transaction set. Puccio recently confirms this trend in his E-Comm article, "Standards or Suggestions?" Even with EDI standards, firms do not have to abide by the standards. Puccio explains how one particular company was converting and integrating EDI into their company's applications. Of the 20 trading partners, one EDI capable firm was a particularly large corporation. This corporation incorrectly used the planning schedule (830 transaction set) to send shipping data and the shipping schedule (862 transaction set) to send forecasts. Because of the desire to integrate all 830 and 862 transactions, data were screened prior to their insertion into the company's databases. If a transaction originated from the large corporation, it first was converted prior to uploading. The conversion task "quickly became more complicated than designing the rest of the database systems. A significant delay in the implementation was caused by this need to accommodate one of their largest customers and that company's non-standard use of EDI. The extra work probably cost an extra three months of meeting, planning, designing, and finally programming." The additional cost required to solve the problems associated with a non-conforming

EDI firm, in this case \$30,000-\$60,000, was borne solely by the small firm. [Ref. 15:p. 17]

E. VALUE ADDED NETWORKS (VANs) AND VALUE ADDED SERVICES (VAsSs)

Because of the variability in standards, many VANs and VAsSs continue to play a significant role within EDI activities. An "EDI Forum" survey found 32% of all EDI users subscribe to two or more VANs. [Ref. 16:p. 26] The dual VAN/VAS subscription, in part, stems from the willingness of firms to satisfy its large "unique EDI" customers, as Puccio's example indicates, as well as its other conforming EDI trading partners. Rocketdyne, for example, uses a host of VANs in order to accommodate their company's high volume of day-to-day EDI transactions. In this example, Rocketdyne uses several VANs as its electronic mailbox. [Ref. 17] Unfortunately, dual VAN/VAS relationships also drive up costs for many firms. VANs and VAsSs, however, are better positioned to manage the EDI configuration issues both across and amongst industry users. Thus a firm only pays or transmits to a VAN or VAS, who then forwards the EDI transaction to the respective firm. VANs or VAsSs can also provide additional services and opportunities to both expand and increase business and EDI usage. G.E. Information Services, a Federal Government certified VAN, has more than 40,000 EDI trading partners which new firms can build upon to expand their business base. [Ref. 18] However, services provided by VANs and VAsSs can be costly, especially to small businesses.

F. EC/EDI HISTORY AND BACKGROUND WITHIN DOD

Within DOD, EDI is not new. Promoting EDI usage in a 1988 memorandum, the Deputy Secretary of Defense encouraged adoption of EDI methods based upon numerous Federal studies, extensive commercial research, and actual EDI experience base of nearly 20 years in both public and private sectors. This memorandum called

for military departments and defense agencies to make maximum use of EDI methods. In 1990, EDI methods were again promoted by the Defense Management Review Decision (DMRD) 94. DMRD strove to provide DOD "with the capability to initiate, conduct, and maintain its external business related transactions and internal logistics, contracting and financial activities without requiring the use of hard copy media." [Ref. 4:p. 201] DMRD's revalidation in December 1992 not only promoted the elimination of the paper paradigm in favor of an electronic paradigm but also viewed EC as economically desirable due to the current political and economic environment. Based upon anticipated DOD savings using EC/EDI methods, substantial cuts in both manpower and funding were preprogrammed into future DOD budgets. [Ref. 4:p. 202]

G. PRESIDENTIAL MANDATE FOR EC/EDI

On October 26, 1993, President Clinton issued an Executive Memorandum titled "Streamlining Procurement Through Electronic Commerce." The President committed the Federal Government to adopt and implement EC and EDI for all appropriate Federal purchases as quickly as possible. One stated goal in this memorandum, to be accomplished by January 1997, is to conduct Federal Government purchases through electronic commerce methods. Due to the 1997 deadline, EC was propelled into the forefront of acquisition reform and changes to existing procurement processes. Additional objectives of this memorandum were:

1. Exchange procurement information such as solicitations, offers, contracts, purchase orders, invoices, payments, and other contractual documents electronically between the private sector and the Federal Government to the maximum extent practical;
2. Provide businesses, including small, small disadvantaged and women-owned businesses with greater access to Federal procurement opportunities;

3. Ensure that potential suppliers have simplified access to Federal Government's electronic commerce system;
4. Employ nationally and internationally recognized data formats that serve to broaden and ease the electronic interchange of data; and
5. Use agency and industry systems and networks to enable the Government and potential suppliers to exchange information and to access Federal procurement data. [Ref. 19]

To implement EC and to achieve his objectives for EC, the President set forth the following four milestones:

- By March 1994, define the architecture for the government-wide EC acquisition system and identify executive departments or agencies responsible for developing, implementing, operating, and maintaining the Federal electronic system.
- By September 1994, establish an initial EC capability to enable the Federal Government and private suppliers to electronically exchange standardized requests for quotations (RFQs), quotes, purchase orders, and notice of awards and begin government-wide implementation.
- By July 1995, implement a full-scale Federal EC system that expands initial capabilities to include electronic payments, document interchange, and supporting data bases.
- By January 1997, complete government-wide implementation of EC for appropriate Federal purchases, to the maximum extent possible. [Ref. 19]

Due to the President's Mandate, there has been a flood of activity within all areas in the Federal Government, including DOD and its various agencies, to make EC a reality. [Ref. 20:p. 29] DOD attempted to lead, aggressively, in EC/EDI reform. Staunchly advocated by senior DOD leadership, such as Colleen Preston, Deputy Under Secretary of Defense for Acquisition Reform (DASD (AR)), EC/EDI

was viewed, in many respects, as the golden panacea to solve many of the perceived ills and inefficiencies of DOD procurement. EC/EDI gains, if implemented properly, indeed have the potential to:

- Reduce bureaucratic red tape
- Increase access of firms in the procurement process
- Reduce paperwork and procurement costs
- Reduce delays in acquisition
- Increase Federal work force productivity
- Increase customer service
- Increase cost effectiveness of Government operations and efficiencies [Ref. 13]

H. DUSD EC/EDI PROCESS ACTION TEAM (PAT) REPORT

On July 22, 1993, Colleen Preston, DUSD(AR), directed the chairman of the Corporate Information Management (CIM) Procurement council to establish a PAT in order to assess EC/EDI capabilities as well as develop a comprehensive EC implementation plan. The team also was to assess current contracting capabilities in the DOD EC/EDI infrastructure. The objectives of the team were:

- To develop a comprehensive plan for implementing an EC approach for procurement functions consistent with the ANSI X12 standards.
- To develop a planning estimate for the resources and schedule required.
- To identify relevant policy issues.

The report, "DOD EC/EDI in Contracting Report," 20 December 1993, is in effect, the EC manifesto within DOD. Due to the report, an EC/EDI office under

DUSD (AR) was created, which is presently headed by Ms. Delores "Dee" Smith. Because the plan was never formally accepted or supported by Director of Defense Procurement (DDP), Ms. Eleanor Spector, the report became the defacto plan due to the lack of any official stated EC policy, guidance or support for EC/EDI. The lack of policy, guidance and leadership from DOD policy makers in USD (A&T), OSD, or Office of Federal Procurement Policy (OFPP), other than Colleen Preston, has limited the effectiveness of EDI implementation. [Ref. 21] Thus, any policy or guidance not issued by Ms. Spector's office, such as EC/EDI "policy" statements emanating from Ms. Preston's office, lack the appropriate authority to implement policy, plans, or changes (See Appendixes C and D). Hence the report has become the unofficial defacto DOD plan. In DOD, EC policy and EC/EDI implementation are disconnected.

The strategic goal of the EC/EDI PAT team was to present a "single face to the industry." "Single face to industry " was defined in the report as:

...performance of EC by the Government using EDI in accordance with Federal information processing standards and a common set of business practices and operational principles. It must be a solution which allows the vendor to be able to process the transaction to and/or from any DOD activity, minimally subscribe to one VAN to do business with all DOD, and register only once to become a DOD supplier (rather than with each DOD component/activity). [Ref. 4:p. iii]

The strategy of the DOD plan focuses on the "single face to industry" concept and the implementation of hardware to make "single face to industry " work. In comparison, this only addresses one small aspect of successful EDI plans in the private sector. Successful firms have an "integrated strategic plan in place to guide EDI development and use. If EDI is to change the way a company does business, then managers in all functional areas need to know what to expect and what will be expected of them as the company's EDI capabilities develop." [Ref. 22:p. 541] In

this respect, the DOD plan fails. Little or no functional guidance or vision is available in the DOD plan and, as discovered in recent USMC interviews for this report, no one indicated what to expect nor what will be expected from them once EDI occurs.

Another implementation issue concerns the definition of "single face to industry." As in the commercial sector, not every DOD agency or Service must be identical, but certain processes must be "transparent" to the vendor, that is, it looks the same to the user. DOD's interpretation of this concept appears to mean one single common closed-loop architectural solution. Recent articles in Government Computer News (GCN) and Federal Computer Week (FCW) highlight the problems associated with a narrow interpretation of EC/EDI processes. Sprehe, president of Sprehe Information Management Associates, Stern, Vice President of Marketing, Sterling Software Inc.'s Federal EC Division, and Termin, editor of GCN, all point to DOD's interpretation of "single face to industry" as a major inhibitor to the implementation of EDI in DOD. The one-to-many vice the one-to-one solution is contrary to commercial practices. Businesses have proven the advantages of a single generic EDI standard and a single set of business processes with all trading partners. Businesses do not view the single face to industry as a systems architecture issue. [Ref. 23] Flexibility is necessary in any EDI implementation in order to make EDI possible for the firm's vendor base. One inherent benefit of EDI is that firms don't dictate what type of a system is necessary, only what EDI transaction standard will be used. It is this flexibility that Mr. Temin refers to. The technological advances in EDI using internet technologies or messaging standards may ensure that the system being created by DOD is outdated when it is fully functioning and operational. By defining "single face to industry" as an architectural issue, the necessary flexibility required to conduct and expand future EC/EDI activity may be drastically reduced. "NetworkWorld" reported such limitations as Government EDI usage was "bogged

down" while "commercial EDI usage is soaring." The Government has more than 21 million small purchases each year, yet only 57,536 Request for Quotations (RFQs) and purchases were sent via EDI gateways run by DISA. Of the thousands of vendors who do business with the Government only 47 have registered with the government's national trading partner database. [Ref. 24:p. 43] For DOD, EC/EDI usage has fallen well below its original expectations, such as the desire for more than 350,000 electronic trading partners by the end of FY96. [Ref. 25:p. iv] Reflecting the slow pace of EC/EDI activity, most Federal Agency heads acknowledge that they will not meet President Clinton's 1997 EC/EDI Mandate. [Ref. 26:p. 1]

The Federal Electronic Commerce Acquisition Team completed its report titled, "Streamlining Procurement Through Electronic Commerce: Final Report." nearly one year after the completion of the DUSD's EC/EDI Report. Although the Federal Report had DOD representatives participating, the report is substantially more flexible in its interpretation of EC/EDI. The Federal EC/EDI Report is much more accommodating to advancing technologies such as messaging and internet technology. Jim Oravec, consultant for KPMG Peat Marwick on EC issues, stated that the Federal EC/EDI plan is excellent. It is so good the state of California may use or duplicate parts of the plan in its drive to convert to EC methods. The Federal plan is practical, flexible, and much more in line with commercial EC/EDI practices. According to Mr. Oravec, the Federal version is not looked upon favorably within DOD. This is due to its general interpretation of "single face to the industry" versus DOD's strict architectural interpretation of "single face to the industry." [Ref. 27] Regrettably, there is also confusion as to which plan is the EC/EDI plan. DOD is part of the Federal Government. DOD sent representatives to the Federal Electronic Commerce Acquisition Team who participated in developing the Federal plan. DOD, however, does not appear to recognize the Federal plan. Answering questions about

DOD's progress concerning EC/EDI implementation in April, 1996, Ms Dee Smith, Director of DOD's EC/EDI Office, did not recognize the Federal plan, only DUSD's EC plan. [Ref. 28] There is confusion as to which "vision" and definition of "single face to the industry" is the correct version.

Further in-depth investigation into DUSD's implementation plan is not within the scope of this investigation. However, several of Monczka's concepts within DUSD's Report have not been resolved more than two years after the issuance of the unofficial implementation plan. These issues are:

- Develop a Legal Approach
- Finalize Policy and Procedure
- Establish Audit Approach

Certainly the schism between DDP and DUSD(AR) mentioned above is an example of the policy issue. A legal example is the U.S. Navy's suspension of FACNET transactions due to the unresolved legal ramifications and issues such as lack of trading partner agreements, unworkable and unenforceable central contractor registration procedures, and DISA's inability to ensure procurement integrity within the FACNET architecture. The inability for DOD to integrate EDI within DFAS in order to make electronic payments also displays problems in DOD's audit approach, planning, and lack of integration efforts.

I. MARINE CORPS EC/EDI EXPERIENCE

Marine Corps experience with EC/EDI is limited. The Marines use e-mail and have Marine Corps wide e-mail connectivity. It is slowly expanding its e-mail connectivity to the internet, but is very cautious in doing so. [Ref. 29] Contracting offices are also wired into the Marine Corps Wide Area Network (WAN) and use e-mail within the Marine Corps. Unfortunately any EC activities are presently limited

to e-mail within the Marine Corps WAN except for one office in Kansas City which is fully EC/EDI capable due to its use of an Army automated procurement system. Contracting offices presently do not contact their vendor base using e-mail methods, but do make extensive use of FAXes if applicable. Bar coding technology is used by military units for tracking logistic assets such as Fleet Service Support Group (FSSG) as it offloads Maritime Pre-Positioning Ships (MPS). (Author witnessed bar code usage during exercises at White Beach, Okinawa, Japan, March 1995). Another office, Camp Lejeune, is working on transitioning from a paper process to an electronic process, but relies on its own expertise, experience, and funding to move towards a paperless paradigm. Lejeune's efforts are independent of the EC/EDI initiatives that affect their site and their automated procurement system. Unfortunately, the Marine Corps' automated procurement system is a large hurdle and negative influence to overcome in the move towards EC/EDI within the Marine Corps.

J. EC/EDI ASSOCIATION TO THE MARINE CORPS' AUTOMATED PROCUREMENT SYSTEM

The Marine Corps' EC/EDI experience is directly related to their automated procurement system, Base Contracting Automated System/Menu Assisted Data Entry System (BCAS/MADES). BCAS is an on-line Air Force mini computer system based on a Wang computer configuration. It provides abstracts, written solicitations, purchase and delivery orders, basic agreements and contracts. MADES is an added component which interfaces with the BCAS system in order to help prepare the office's solicitation and contract. The EC/EDI capabilities are not integral to the system, but stand alone as an added system that interoperates with BCAS. The buyer utilizes a different hardware/software configuration to complete transmissions electronically than they do for conventional purchase transactions. The MADES

version running on the BCAS Wang platform having EC/EDI expanded capabilities is commonly referred to as MADES II. [Ref. 4:pp. 34-51] Hence, the attitude of EC/EDI is intrinsically associated to the BCAS/ MADES system because it is part of, operates within and complimentary to the BCAS/MADES system. Because of this association, a brief history of BCAS/MADES is necessary. (Author visited three separate offices to interview personnel about EC/EDI. Without exception, statements were only given on the basis that responses are to remain anonymous).

K. HISTORY AND BACKGROUND OF BCAS/MADES

The Air Force - designed BCAS/MADES program, written in COBOL, was initially bought to temporarily fulfill the need for an automated procurement system for Marine Corps contracting needs. Although other factors were considered, the major factor in the selection of BCAS/MADES was cost. BCAS/MADES would be inexpensive for Marine Corps use. Although perceived as a low cost "temporary, quick fix" alternative, in hindsight life-cycle costs are excessive and maintainability is difficult. Most purchasing agents and system administrators generally indicate the current BCAS/MADES system is difficult to use, is slowly becoming unsupportable, and is not a user friendly system. Because of this, many contracting personnel do not use the system and even find ways to bypass the system.

Although not within the scope of this research, the issues concerning BCAS/MADES that pose problems for contracting offices and as well as develop a negative attitude concerning the system are:

Hardware availability - Hardware costs are high and must be Wang specific;

Modularity - Much of the documentation and workarounds to add capabilities to the COBOL system are not documented and the individuals who worked on the system are no longer available. COBOL is an older, less used, and slowly a less

supportable language. The Air Force presently trains its personnel on COBOL in order to sustain its needs for the BCAS/MADES systems;

Sustainability - BCAS/MADES is fast becoming expensive and difficult to maintain. Marine Corps ADP do not support the Wang equipment. Because of this, Wang maintenance service must be contracted out. Most offices find only Wang personnel can repair the system since no local firms use the outdated Wang system. Wang repairmen have also made comments that even Wang may not support the BCAS/MADES system in the future, assuming Wang continues to be a viable firm in the computer industry. The continued supportability of the BCAS/MADES system is questionable;

Non commercial based technology - Industry has progressed through several generations of computing capabilities and have migrated towards an easier and more user friendly Windows/ Apple/Unix point and click environment.

L. DIFFERENCES BETWEEN BCAS/MADES II OFFICES

LBO believes all contracting offices are using BCAS/MADES and have the most current updates to the system. This is not true. Of the three contracting offices there are three distinct differences concerning the use of BCAS/MADES. Only one office extensively uses BCAS/MADES. Furthermore all offices have different versions of the system at their sites. Thus the perception and belief of BCAS/MADES at LBO sharply contradicts with the actual occurrences at the contracting offices. LBO also indicates the contracting offices and their system administrators are responsible to make BCAS/MADES work. Field office personnel reverse that view and indicate that HQMC is responsible to manage "their" system, particularly with respect to updates and EC/EDI expanded capabilities. Field offices are reluctant to contact Air Force representatives for BCAS/MADES updates or other information due to negative repercussions by LBO. Unfortunately, when left to LBO

personnel, updates sent to contracting offices were incorrectly copied onto discs and were useless to the contracting offices. Due to action, inaction and poor performance, LBO has lost both its credibility and reputation in its management of the BCAS/MADES configuration as well as its ability to manage computer issues for the contracting offices. The field office "computer experts" are now the local system administrators, not LBO personnel. Contracting officers do not trust LBO on computer issues, particularly since LBO "forced" BCAS/MADES upon them. Thus any comments or guidance concerning EC/EDI is unfavorably received by field office personnel because of its "tainted" association with LBO and the BCAS/MADES system. A closer look at the individual offices and how they work with or work around BCAS/MADES is particularly revealing. Generally, field offices either grudgingly accept or do not accept BCAS/MADES.

In contracting office #1, BCAS/MADES was used extensively. Although users indicated it was difficult and hard to use, the office was able to fully implement the BCAS/MADES system. During initial implementation difficulties of the system, system administrators and contracting personnel were sent to a local Air Force Base (AFB) in order to obtain training necessary to implement, use, and manage the system. An LBO implementation team present at the site also went to the AFB for training since they too were not trained on the BCAS/MADES system. The ability to use the BCAS/MADES system was completed, but never garnered praise due to its operational and implementation difficulties. This particular office was the only office to obtain AFB training on BCAS/MADES. The inexperience of the LBO BCAS/MADES installation team and the difficulties in implementing the procurement system irreparably harmed LBO's reputation as "experts" on computer issues. Word also spread to other offices concerning BCAS/MADES difficulties.

Office #2 did not use BCAS/MADES or used it only in exceptions. This in large part was shaped by the implementation of BCAS/MADES. Unfortunately for this office, the initial installation of BCAS/MADES occurred during the absence of their local system administrator. The LBO team installed the BCAS/MADES system and promptly departed the area. Unbeknownst to LBO personnel, the entire contracting computer system crashed after BCAS was brought on-line. This left the entire office without computer capabilities for approximately one week. The local administrator was immediately forced to bring their system back on line. The poor start was ominous. No one wanted to shut down the entire LAN by using BCAS/MADES. This office did not even want BCAS/MADES accessible to its contracting personnel. Time and energy was spent on ways to circumvent the BCAS/MADES difficulties with other applications. They also shared their workarounds with other offices. At the present time, BCAS/MADES is only used in extreme exceptions, if at all.

Office #3's opinion of BCAS/MADES was split between the military and the civilian workforce. The military personnel viewed BCAS/MADES as the only system the Corps had and they were going to use it despite being user unfriendly. The senior military contracting specialist was the predominant BCAS/MADES user within the office. The civilian workforce did not share the military's willingness to use BCAS/MADES, and preferred to use alternatives if possible. If opportunities arose to avoid BCAS most workers generally prefer non-BCAS/MADES methods. In essence half the workforce surmised if this was the best the Marine Corps could provide, they would do their best to use and learn the system despite their negative viewpoint of the system. The other half of the workforce did not share that viewpoint and would use alternatives or workaround solutions to BCAS/MADES.

In general BCAS/MADES is viewed as difficult to use, but can be made to work if extensive training is provided. Due to its age, BCAS/MADES is, indeed, a difficult system which intimidates its users. Generally BCAS/MADES is viewed as an unnecessary burden to use. Hence, BCAS/MADES is to be avoided if possible.

M. EC/EDI AND BCAS/MADES

Because EC/EDI is an additional feature to BCAS/MADES, EC/EDI is not viewed in a positive light. If mandated to use EC/EDI, offices would also be forced to use BCAS/MADES. Much energy and time was spent attempting to use a windows application workaround solution to BCAS/MADES requirements, database, and form reports. Thus EC/EDI is not looked upon favorably because of the requirement that EC/EDI must operate within the BCAS/MADES environment. The schedule to install EC/EDI capabilities, delayed due to technical difficulties, only confirmed the field offices' negative association of BCAS/MADES and LBO's computer expertise. Offices were not informed of implementation delays concerning the EC/EDI updates, which only compounds the field offices' opinion that LBO is incompetent in ADP issues. There is no credibility or trust between HQMC and the contracting offices concerning ADP, BCAS/MADES, or EC/EDI issues. The schedule to implement EC/EDI is approximately one year behind schedule. Transmission Control Protocol/Interent Protocol (TCP/IP) compatibility issues are at the heart of the problem.

MADES TCP/IP requirements at Air Force bases are slightly different than at Marine Corps bases. As mentioned earlier, BCAS/MADES is an Air Force solution. BCAS/MADES works on Air Force Bases but did not work on Marine Bases. Since the Marine Corps has only 27 bases with BCAS/MADES, the Marine Corps is not a significant customer for BCAS/MADES. The priority to fix the Marine problems within BCAS/MADES was not high. Neither LBO nor the PM viewed EC/EDI

implementation problems as a high priority. According to the PM, no one worked on EC/EDI related issues since January 1995. As of February 5, 1996, Marine Corps ADP personnel in Quantico, Virginia have developed a valid workaround solution and are awaiting approval from HQMC to proceed in implementing EC/EDI Marine Corps wide. Thus the EC/EDI delay only fuels continued mistrust and negative attitudes of BCAS/MADES, which also negatively influences EC/EDI within the Marine Corps.

N. AN EXCEPTION TO THE RULE: STANDARD AUTOMATED CONTRACTING SYSTEM (SACONS)

The automated procurement system in Kansas City, unlike BCAS/MADES, is viewed in a very positive and enthusiastic manner by its users. The Kansas City office uses a form of CACI's Standard Army Automated Contracting System (SAACONS). It is an IBM compatible system with three upgradeable functional modules: contracting, small purchases, and requisition entry. SACONS is a derivative of a Commercial Off The Shelf (COTS) automated procurement system from CACI, Inc. The problems and attitudes associated with BCAS/MADES are not present with SACONS. The program is a point and click user friendly system. Procurement personnel like to use the system because of its ease of use. It is accepted and viewed upon favorably by all users. The installation of EC/EDI capabilities also sharply contrasts the BCAS/MADES experience.

In contrast to BCAS/MADES users, Kansas City's SACONS EC/EDI upgrade was an easy and painless process to add on to their system. EC/EDI capabilities are integrated within the operating system. SACONS "has been tested or integrated with EDI efforts by 11 civilian organizations, including the Interior Department. SACONS already supported many EDI services, but by joining with DOD's EC/EDI infrastructure, SACONS participants gained easy access to DOD network gateways.

They now can connect to a pair of entry points for value-added networks (VANs) at DOD megacenters in Columbus, Ohio, and Ogden, Utah. To set up a typical EDI transaction, a procurement official uses a specific application to generate a purchase order, request for proposals or request for quotes. These documents go to a gateway or, the DOD EC/EDI infrastructure. There they are translated into the X12 transaction set of the American National Standards Institute's Accredited Standards Committee. The X12 set then is relayed to one of the megacenters for distribution to participating certified VANs." [Ref. 30:p. 1] Furthermore CACI also trained Kansas City personnel on the added EC/EDI feature in the contracting offices, at their convenience. CACI also helped coordinate an EC/EDI vendors conference for Kansas City in order to educate their vendors on EC/EDI and its impact on the local vendor base. The conversion to EC/EDI capabilities was an easy process. With one keystroke or click of the mouse, the EC/EDI option of SACS is initiated. Kansas City's conversion to EC/EDI also did not cause any problems or burdens to their operations. Due to the smooth and effortless transition to EC/EDI, Kansas City's viewpoint of EC/EDI is positive. Unfortunately for the Marine Corps, Kansas City is the only base using SACS. Therefore, the positive attitude of EC/EDI is the exception at Kansas City, not the rule, for Marine Corps activities.

In summary, the viewpoints of EC/EDI within the contracting community are intrinsically associated with the negative BCAS/MADES opinion. As such, EC/EDI is viewed negatively. Since individuals are not being informed of the problems encountered with EC/EDI implementation, the implementation delay only confirms their negative bias towards EC/EDI, BCAS/MADES, and LBO computer expertise. DOD's EC/EDI implementation problems, delays, slow acceptance of EC/EDI reaffirms the opinion that EC/EDI is presently not a good idea for Marine Corps contracting offices or its vendors. Furthermore, the de-emphasis and low priority

given to the implementation of EC/EDI within the Marine Corps, as exhibited in little or no EC/EDI activity since January, 1995, leads to inaction at the contracting offices. Illustrating the unwillingness to move forward with EC/EDI implementation at the local level, a Marine Corps contracting officer stated, "let me know when you get it [EC/EDI] fixed." [Ref. 31]

IV. INDUSTRY SUCCESS IN EC/EDI IMPLEMENTATION

A. STRATEGIC VISION AND PLAN

Two critical factors necessary for management support are vision for EC/EDI methods and a strategic plan to reach that vision. As indicated by EDI authors Oravec, Monczka, Hinge, and others, successful EC/EDI implementation originates from a sound strategic plan. The implementation of EC/EDI then follows the goals and plans of the strategy. In this respect, R.J. Reynolds (RJR) is an excellent commercial example. The corporate/subsidiary relationship of RJR is parallel to the DOD/USMC relationship.

RJR, a firm in excess of \$88 million dollars in total assets, is divided into two subsidiaries: RJR Tobacco (RJRT), and RJR Nabisco (RJRN). In its December 1995 10-K report to the Securities and Exchange Commission (SEC), RJRT reported \$7.8 billion dollars in U.S. and international sales. RJRT represents 48% of total net sales for the parent corporation RJR. [Ref. 32] Senior management at RJR decided to move towards an EC/EDI process for their corporation in 1987. [Ref. 4:pp. 110-111] This greatly affected RJRT, particularly in their purchasing and payment systems. EDI activities originating in the procurement and purchasing departments, such as Just in Time (JIT) features that EDI promotes, were increasing and approaching critical mass. This had a corollary effect in the payment system. The payment processing workload dramatically increased due to more frequent and smaller orders that JIT creates. Because of this, RJRT believed EDI was not only the cause of the increased workload, but was also viewed as the solution to their problem. Thus in March of 1991, RJRT developed a strategy not to just automate the old paper payment process, "but to obliterate the old process." [Ref. 33:pp. 10-19] The intent of the change was to dramatically improve the ability to pay their bills accurately and on

time. The various goals and objectives that emanated from this strategy were as follows:

- Make payments timely and accurately with an emphasis on simplicity, speed, and enhanced levels of service;
- Rebuild an efficient payment process from the ground up;
- Streamline work flows;
- Capture data at the source with minimal of handling;
- Eliminate non-critical tasks that did not add value to the payment function;
- Empower and encourage employees to contribute and suggest changes;
- Re-evaluate the core functions of accounts payable and focus on the 80 to 90% that were routine tasks. [Ref. 33:pp. 10-19]

As a consequence to RJR's planning efforts, the basic strategy, plan, goals, and objectives were in place. Prior to implementation everyone in RJRT knew the strategy was to "obliterate" the paper process and could collectively work towards that goal in the implementation process. A clear, focused strategy laid the groundwork for support of purchasing personnel, support of management, and cross-functional commitment to EDI. RJRT and all of its employees could move forward and make EDI a reality.

B. OBTAIN MANAGEMENT SUPPORT

In RJR's example, four major critical success factors stand out in their approach to obtain management support:

1. Their belief and desire for fundamental and radical change, achieved through business process re-engineering, as evidenced in their "obliterate" the paper process strategy;

2. Their vision that all transactions be electronic;
3. Their development of a strategic plan, goals, and objectives to move from the current process to an electronic vision and process;
4. Their suppliers desire to cooperate with RJR in order to move forward in implementing EC/EDI. [Ref. 33:pp. 10-19]

Within RJRT, EC/EDI also gained immediate management support and commitment required for the project's success. Senior leadership at RJR supported EC/EDI methods. The corporation's upper level management support and commitment led RJR's subsidiaries towards early acceptance and use of EC/EDI methods. EC/EDI was essential in order for RJRT to switch to an electronic purchasing and payment process. [Ref. 33:pp. 10-19]

Another firm, Priester Supply Company, an electronic and telephone supply company, credits its implementation's success to top management's unconditional support of EC/EDI implementation. [Ref. 34:p. 29]. EDI World Institute emphasizes commitment and involvement of management as one of four critical factors in EDI implementation success. Everest Frozen Foods also credits senior management support and direction as essential to successful EDI implementation. [Ref. 34:p. 32] In addition to management support, EDI implementation must also have the support and backing of purchasing personnel.

C. ESTABLISH PURCHASING SUPPORT

Purchasing support is "absolutely necessary to develop the commitment required for EDI success." [Ref. 1:p. 15] "Purchasers are the primary users of EDI and will be the communicators to outside suppliers about the necessity, importance, and benefits of EDI." [Ref. 1:p. 15] RJR chose to implement EDI first in purchasing which laid the foundation for early support and commitment from purchasing managers and personnel. Furthermore, RJR purchasing personnel did not just

communicate benefits of EDI to its supplier base, they followed verbal support with action. RJR paid for all EDI transition costs in order to make EDI occur with the last 5% of their suppliers. By paying for suppliers to switch to EDI methods, RJR quickly garnered the support of purchasing management and personnel. Without such support, implementation would be "very difficult to complete." [Ref. 1:p. 15] Purchasing support and use of EDI also affected operations in other subsidiaries and organizations.

As workloads in other areas increased, such as more frequent payments and purchase orders, other managers also began to view EDI as a way to make their operations more efficient. Purchasing personnel were in favor of increased EDI use as any improvements in the electronic process greatly complimented their electronic process. Moves to improve the accuracy and service to its customers and suppliers through EDI, such as more timely and accurately payments or enhanced levels of service, were looked upon favorably by purchasing personnel; such benefits could be communicated to their suppliers, therefore reinforcing the benefits and investment in EDI. [Ref. 33:pp. 10-19] Another example of purchasing support comes from a similar large U.S. firm, 3M. 3M also began EDI within the purchasing departments in 1987 and expanded to the financial departments in 1991. A senior executive management meeting was held at 3M to discuss how EDI greatly benefited the accounts payable department. This meeting led to increased support and commitment from executives and managers in both the purchasing and finance departments. [Ref. 35:p. 50] Purchasing support is important, however a commitment to EDI must also permeate the organization.

D. DEVELOP CROSS FUNCTIONAL COMMITMENT TO EDI

RJR's commitment to an electronic process was firm and unquestionable. RJR's pursuit of an entire electronic paradigm lasted six years. Senior management

supported EDI in 1987, and in 1993 all transactions were completely electronic within RJR. [Ref. 4:pp. 110-111] Hence RJR's commitment weathered a six year duration which, ultimately, led to a 100% electronic process. This transition involved 1,800 trading partners with over 6,000 purchase orders annually. In this conversion, the last 5% of RJR's suppliers did not desire to switch to EC/EDI methods. RJR invested \$40,000 of their own money in order to transition the last 5% of their suppliers into electronic trading partners. [Ref. 4:pp. 110-111] RJR was extremely committed to make their processes electronic, to include paying for the last remaining suppliers who could not afford EC/EDI, or did not have the expertise, time, or desire to make EC/EDI occur. RJR made EC/EDI a reality. In a similar fashion, Mobile also subsidized its 540 lubricant product distributors nationwide when it forced them to use EDI methods. Mobile helped cover the costs for personal computers, software, and training necessary to conduct electronic transactions with the company. Interestingly, 20% of that group now use EDI with other electronic trading partners. [Ref. 24:p. 43]

RJR's commitment and message to the subsidiaries of RJR was clear: EDI usage would be a company wide initiative. RJRT, sensing the change EDI was bringing to their organization, began to look at other functional areas EDI could be applied to within their subsidiary. Hence the initial EDI purchasing methods began to drive other functional areas towards EDI. Soon EDI was viewed by finance managers within the organization as an answer to increase responsiveness and account billing. RJRT immediately received management's commitment, in both people and money, to ensure EDI was successful. [Ref. 34:pp. 10-19] Another example of cross functional commitment and company wide support is Dannon.

Dannon Company, famous for yogurt, rapidly received support for EDI from three important stakeholders within Dannon. Dannon's triumvirate billet holders, all

acting and sharing the chief of information officer title, were excited about the opportunities EDI would bring to their company. The positions and responsibilities of the triumvirate cover very different functional areas: Mark Nelsen, Director of Sales and Marketing, Crystal Kennedy, Director of Information services, and Richard Kravchuk, Director of Manufacturing Systems. "Our sales force is solidly behind EDI. Many customers have demanded it and our salespeople want to provide it as an additional sales tool. There's a strong perceived need for it," says Nelsen. Thus the widespread support from the different functional company areas, in Dannon's case sales, information systems, and manufacturing, are clear examples of the commitment EC/EDI requires from all personnel within the organization. Cross functional support is necessary and essential to successful EC/EDI implementation. [Ref. 36:p. 64]

E. ORGANIZE FOR EDI

Organizing for EDI can happen in many forms. Jim Oravec mentions two forms: centralized and decentralized. Large firms who centralize EDI functions and leadership tend to be more successful in implementing EDI. GE, DuPont, and Texas Instruments, are examples of successful centralization of EDI implementation programs. "Others without central EDI direction have struggled." [Ref. 37:p. 1] Centralization, a contributing factor in successful EDI implementation, can be conducted by one full-time person even in large Fortune 500 firms. [Ref. 37:p. 1] Centralization also reinforces one of the model's successful traits; EC/EDI leadership is firmly established.

EDI leadership is also accompanied by or manifested through either an EDI team, steering committee, or a combination of the two. Cross functional participation and involvement is both necessary and essential in organizing for EDI. "User ownership of design and implementation is crucial because users will be managing the automated work flow." [Ref. 38:pp. 90-93] In this respect, 3M established an

EDI procurement team. 3M contributes much of its EDI success to the single highly coordinated unit which works closely on EDI efforts. If problems occur at any level in any organization, internally, externally, or in other functional areas, all parties know they can turn to the team for help and quick resolution. Current and future EDI plans and procedures are also managed by the EDI team. 3M has designed a "one stop" shopping concept for all its EDI needs. Rocketdyne also has set up a similar concept in its use of Rockwell's Information Systems Center EDI Team. Additionally, Rocketdyne can turn to its EC Council/Rockwell EDI User Group for further assistance. RJRT also founded a 10 member team composed of managers, supervisors, and information resource personnel. This team quickly expanded to other functional areas with the addition of personnel from purchasing, controllers, traffic and auditing. Once functional participation and organization occurs, a pilot program can begin to form.

F. ESTABLISH A PILOT PROGRAM

Monczka and Hinge indicate the need to test the pilot product prior to full EDI implementation. There are several clear examples relating to EDI pilot tests. NASA, for example, is currently testing pilot projects to make all purchases below \$500,000 available electronically through EDI methods, based on the internet. Premenos, an EDI services company, also is testing several internet-based EDI pilot projects. Most firms who participate in Premenos's Templar project are now running independent pilot programs at their respective companies. [Ref. 39:p. 18] Premenos also is actively scouting for firms interested in a pilot project that would offer secure encrypted and authenticated EDI transactions. [Ref. 40:p. 54]

CargoNet, a private EDI service supported by many transportation firms within Hong Kong, conducted four months of testing at selected pilot installations. The integrated approach of CargoNet reaped praise and support from Hong Kong's

business community. The pilot project was quickly supported by development partners representing all segments of the trade and transport community in Hong Kong. [Ref. 41:p. 3] CargoNet's EDI was specifically tailored to allow freight forwarders, consolidators, shipping lines, airlines and terminals meet the needs of cargo shippers and consignees. CargoNet's pilot project achieved successful EDI transactions in its initial four month test that its governmental counterpart, Tradelink, was unable to do in almost a decade. [Ref. 42:p. 22]

Dannon also ran a test pilot prior to full implementation. Dannon initiated a four month long testing period with several of its customer grocery chains. The sole purpose of the pilot was to learn, understand and become educated on EDI methods. Crystal Kennedy, Dannon's director of information services states one of Dannon's biggest lessons in the pilot program "was the need to link our finished goods inventory with the EDI network." [Ref. 36:p. 64] Pierre Belvedere Inc. of Montreal spent approximately \$15,000 in research, testing, and software consultant work to build its pilot system. [Ref. 43:p. 48] In successful EDI organizations the precedent is not only clear to have a pilot project as part of the implementation process, but also to have an evaluation method for the pilot project.

G. REVIEW PILOT RESULTS AND MODIFY

Croner-Tyco Toys, an Australian toy distributor and subsidiary of U.S. Tyco-Toys, "handles 12,000 to 15,000 order lines per month, 6,500 of which typically involve a value of less than \$1.50 and an order quantity of one." [Ref. 34:p. 50] The frequent low dollar, low quantity orders was inefficient. According to Croner-Tyco Toys national operations manager Paul Carter, EDI is the answer to efficiently solve the company's numerous low dollar and low quantity purchase orders. Although Croner now plans to integrate EDI into their accounting, inventory and order processing systems, their first try at EDI was unsuccessful.

Croner began its EDI association in 1988. During a brief EDI pilot project with K-Mart, Croner was unsatisfied with the results of its EDI pilot. Croner and their customers were unwilling to use and commit to EDI methods. This led to the pilot's poor demonstration, lackluster performance, and initial demise of EDI within Croner. Croner's pilot project was unsuccessful and unacceptable to the firm as well as its customers. During the 1991-1992 time frame, both Croner and its customer base developed a new interest in EC/EDI. Croner, bought and renamed Croner-Tyco Toys by U.S. based Tyco-Toys, was pressured to increase the efficiency of its distribution system. For their new EDI pilot project, Croner-Tyco Toys would look at an integrated EDI process. In their second try at EDI both Croner-Tyco Toys and their customer/vendor base were committed to EC/EDI. Accordingly the technology, comfort level, efficiencies, and savings of an integrated EC/EDI solution were now acceptable to all parties. As in Croner's example, pilot projects may not all be successful for each and every EDI pilot project. However, a willingness for leaving options open, re-evaluating results and methods of the pilot, and modifying the project are qualities of successful EDI programs. Just as pilot projects change to fit various implementation plans, changes in policies and procedures must also be considered in the implementation of EDI.

H. CHANGE POLICY AND PROCEDURE

In a September 1995 EDI World article, Rocketdyne was featured for its successful implementation of EDI. One strong aspect of Rocketdyne's plan lies in its development of EDI policies and procedures. Rocketdyne approached its supplier base to move towards EDI. An EDI process flow was conducted to iron out information for EDI, protocol, personnel and points of contact. Rocketdyne, for example, would help shepherd its small business suppliers through the EDI process. Within a few weeks hardware, software, and transaction sets were quickly established

by the participating firms. A trading partner agreement followed and a comprehensive understanding of the policies and procedures were in place. Rocketdyne also educated their suppliers thereby enhancing their EDI knowledge and increasing the probability that EDI implementation would be successful. Based upon their EDI experience, Rocketdyne now has the following policies concerning EDI:

- Maximize the use of EDI for procurement
- Require suppliers to be EDI capable (with some exceptions extending to small businesses)
- Achieve 90% of all suppliers via EDI
- Integrate EDI to balance of purchase ordering systems

Rocketdyne's example successfully addresses four important factors in EDI policies and procedures:

1. Identify systems and procedures affected by EDI implementation and the policies and procedures to support EDI;
2. Develop EDI suppliers and define what those suppliers will be expected to do;
3. Establish a contractual agreement to do business electronically;
4. Establish the internal policy, procedures and personnel mechanisms required to support electronic activity. [Ref. 17]

As indicated above, education was an integral procedure within Rocketdyne's process. Education is vital in the implementation of EDI.

I. DEVELOP KNOWLEDGE, EXPERIENCE, AND EDUCATION

As part of the education process 3M continually conducted EDI Seminars for its suppliers. In 1995 at least six seminars were held for 3M's suppliers to attend.

According to Vince Schoon, a portion of 3M's seminars are "dedicated to explaining and communicating the advantages of EDI in general and the added benefits gained for integration." [Ref. 35:p. 51] 3M also included financial EDI education taught by its accounting EDI team members. The purpose of this was to explain the benefits of financial EDI transactions. 3M also educates suppliers on the hurdles suppliers must overcome in order to receive funds and remittance advice electronically. [Ref. 35:p. 50] Pratt and Whitney learned it needed to better educate both its EDI software/network vendors as well as its suppliers in order to successfully implement an electronic supplier relationship. [Ref. 44:p. 11] Once basic fundamentals are established, such as education, broad based implementation can begin.

J. BROAD BASED IMPLEMENTATION

In the broad based implementation a trend emerges in using the purchase order 850 and Functional Acknowledgment 997 transaction sets. These two sets are generally part of the initial pilot tests. Shortly thereafter, the use of other transaction sets, greatly effects and broadens the scope and breadth of implementation. Once the use and acceptance of EDI purchase orders grows, EDI spreads across the organization to include cross functional areas, as well as between companies. 3M's, RJR's, Priester Supply Company's, Teradyne Connection Systems's, Dannon's, and Rocketdyne's supplier bases all initiated EDI broad based implementation with the purchase order. Once successful, newly EDI trained personnel began to infect other functional areas and press for continued integration of EDI, particularly in finance departments. In the twelve case studies conducted by EDI World Institute [Ref. 34:pp. 22-23], all twelve broadly implemented the 850 purchase or the 810 invoice transaction set. All twelve also indicate a desire to expand the use of EDI or to integrate EDI capabilities internally and cross functionally. For RJR and 3M, the 850 EDI purchase order complemented JIT's process, frequent orders, and increased

billings. To compensate and adjust for increased billing, 810 EDI invoices were quickly brought on line. Once broad implementation occurs, a procedure to review and measure benefits in addition to costs is necessary.

K. REVIEW RESULTS AND COSTS/BENEFITS ANALYSIS

A method to review the EDI process is necessary, particularly as more suppliers and vendors conduct transactions electronically. In many firms this is handled by a committee or by the designated EDI expert. As indicated above, 3M consolidated this function to its EDI procurement team. 3M contributes much of its EDI success to the single highly coordinated unit which works closely with its EDI participants. In a review of its EDI implementation, 3M discovered EDI suppliers are more likely to receive timely payments. 3M also discovered "invoices received via EDI have an additional 7% chance of being paid on time due to the completeness and accuracy of the invoices." [Ref. 35:p. 51] Because 3M receives 1.2 million purchases orders annually, increased EDI accuracy has had a positive affect on its operations. Catnic, a British manufacturing firm, discovered two valuable lessons in its review of EDI: 1) customers value EDI links and 2) the expenditure of funds to implement EDI is not cost prohibitive and is decreasing with technological advances in hardware and software. [Ref. 45:pp. 14-16] In Nissan's review of EDI, it found an immediate reduction in labor required for mailings, reduction in errors, and a shortening of lead-time for delivery information to their supplier base. [Ref. 45:pp. 14-16]

EDI implementation cost/benefit analysis is also very important to private firms. If EDI benefits are not justified, financial commitment as well as senior management commitment, may not survive. This is clearly displayed in Croner-Tyco-Toys first pilot test mentioned earlier. Reviews to ensure error-free EDI operation allows firms to evaluate if EDI is meeting the various objectives and goals

of the implementation plan. Although the benefits to EDI are well documented and numerous, the following examples are a few of the successes stories of EDI:

McGavin Foods LTD- saved \$50,000 annually on couriers, mail, and telecommunication costs [Ref. 46:pp. 43-44].

Mercantile Stores - reduced lead time of orders by 41% [Ref. 44:p. 11].

Dannon Company - reduced labor and fax-based communications by \$300,000-500,000 and increased accurate and timely orders from customers [Ref. 36:p. 64].

U.S. Air Force - saved \$1.3 million over two years through lower prices as a result of increased electronic competitive bids [Ref. 47:p. 65].

Detroit Edison - reduced cost of processing paper invoice from \$10 to less than \$1 for an electronic invoice [Ref. 24:p. 43].

Mobile - reduced payments from 30 days to 2 days, reduced banking costs by 5-10% and reduced clearing house payment costs from \$.50-\$2.00 to \$.12 [Ref. 24:p. 43] and [Ref. 44:p. 11].

British Petroleum - saved \$1.7 million by eliminating paper invoices [Ref. 48:p. 49].

BC Liquor Distribution - saved \$1 million in reduced annual labor, material, and inventory [Ref. 49:p. 43].

Pierre Belvedere Inc.- increased accuracy in transactions, reduced costs resulting from incorrect orders, decreased order-to-shipment time from days to same - day shipment, and increased company's organization and material management [Ref. 43:p. 48].

U.S. Army - saved \$50,000 in its initial Hawaiian electronic bid [Ref. 50].

Rocketdyne - eliminated paperwork, mailing costs, purchase order typing costs, labor handling costs, purchasing errors, warehouse inventory, provided a clear audit trail and 24 hour service [Ref. 17].

RJRN - reduced paper purchase order costs from \$70.00 to \$.93 [Ref. 51:p. 1].

Tallent - created a competitive advantage, reduced lead times, reduced demand updates from days to hours, increased savings on data input [Ref. 52:pp. 16-17].

3M - increased data accuracy cost savings, gained a competitive advantage, reduced or allowed staff reallocation, reduced cycle time, increased timely invoicing, received more timely payments, increased accuracy and completeness of invoices, increased on-time payments by 7% [Ref. 35:p. 50].

IBM - reduced processing costs by 25% [Ref. 53:p. 2].

Although there are measurable aspects to EDI benefits, not all benefits are measurable. Some benefits to EDI may be more aptly viewed as cost avoidance. For instance, a study by the Gartner Group indicates incorrect orders cost ten to fifteen times as much as processing an accurate order. [Ref. 54:pp. 44-49] Thus, the increased accuracy and reduction of inaccurate orders resulting from EDI transactions is not an obvious and easily quantifiable savings. Unfortunately such savings are not immediately seen on the company's bottom line and may be hard to justify in a cost/benefit analysis. 3M advises not to rely solely on the cost reduction firms hope to get with EDI methods. According to 3M, firms should first focus on achieving critical mass, total integration, and process changes. Once critical mass and integration occurs, the costs of processing transactions can be significantly reduced. 3M's long term strategic view, however, appears to be an exception to the norm.

Despite overwhelming quantitative and qualitative support for EDI, there is another perspective to EDI cost/benefit analysis. There are questions concerning the costs for EDI systems, particularly from large firms. This may be caused, in part, of

the difficulty to quantify EDI's benefits. There is a "perceived high cost of implementation with no immediate quantifiable return on investment", even though a PC based EDI system costs approximately \$5,000. A senior analyst for Brinker International, a restaurant chain in Dallas, indicates EDI may be justified in the long run, but more than likely is not justified in the short term. According to the Brinker analyst, initial EDI setup costs must provide comparable market rates of return before EDI can be viewed as a good business decision. [Ref. 55:p. 91] Computerworld published industry's concerns about EDI cost in its article, "EDI's move to prime time stalled by cost perception." "In some cases," the article states, "there is little compelling evidence of a return on investment" for an EDI project. [Ref. 55:p. 91] Despite the cost perception, EDI use and growth is soaring. Frost and Sullivan predicts the EDI market will quadruple from \$699 million to \$3.2 billion in 2001. [Ref. 56:p. 8]

L. CONTINUOUS MONITORING, IMPROVEMENT, EDUCATION, AND COMMITMENT

One aspect unique to successful EDI firms is the continuous monitoring, improvement, education, and commitment necessary for EDI implementation. As indicated above many firms have teams, committees, or one central unit to help monitor, improve, and educate in order to foster continued support and long term commitment needed for EDI success. General Public Utilities (GPU) is testing EDI electronic time sheets for contracted services covering their plant sites. Detroit Edison is also accepting EDI time sheets for services such as security or tree pruning. [Ref. 24:p. 43] RJRT used Ford Motor Company's electronic receipts settlement (ERS) concept and expanded it to include EDI transactions from transportation requirements and recurring non-industry items. ERS essentially pays vendors or suppliers upon receipt of a shipping status or at a preset date. Thus these firms are

innovative in that they may pay a vendor for supplies or services before actually obtaining the products or services. [Ref. 33:pp. 10-19] 3M's team, for instance, continues to review and seek for innovative use of EDI technology similar to RJRT's ERS concept. [Ref. 35:p. 50] Contracted services such as janitorial equipment, maintenance, rent, and software license agreements are now electronic. [Ref. 33:pp. 10-19] Priester also is an excellent example to learn from their EDI activities.

Priester was forced to re-think and improve their EDI process due to a customer's desire to invoice electronically. After initially installing EDI capabilities, Priester decided to switch to an integrated EDI process that completes an entire purchasing cycle, purchases, payments, invoices, and payment advice, in an electronic EDI fashion. Customer pressure and a willingness to change motivated Priester to continually improve, monitor, and initiate new methods of EDI activity. Priester Continuously monitored EDI activity, ensuring EDI traffic is both accurate and successful. Priester's diligence has led to increased business and decreased operating costs: 50% of all receivables are now conducted electronically through EDI. [Ref. 34:pp. 27-29] 3M also has shown exemplary behavior in its ability to continuously monitor and improve its EDI process.

3M as mentioned earlier, has a procurement team to help manage its monitoring and improvement process. The control and accuracy of their EDI activity is increased with their use of the functional acknowledgment transaction set (997). 3M also asks its EDI capable firms to monitor their EDI process in order to catch any errors from 3M. 3M also continually strives to educate their vendors on the benefits of EDI and EDI integration. EDI integration is important as the success and commitment of EDI directly correlates to greater EDI integration. Substantial integration of EDI within the company's operating systems, leads to successful EDI implementation, increased use, higher satisfaction, and substantial company-wide

benefits. [Ref. 57:p. 3] Through various education and EDI recruitment platforms, such as seminars, 3M anticipates adding an additional 350 firms willing to use electronic purchase orders and 400 new firms willing to conduct financial EDI transactions. In this manner, 3M continually educates their vendor base and attempts to expand EDI use with their suppliers and vendors. In order to keep the EDI momentum and high motivation among EDI participants, 3M also conducts studies to identify alternatives for those suppliers who do not plan to move to a true EDI/EFT cycle. 3M creates interest for their non-integrated, non electronic trading partners by providing current topical information for potential electronic options that arise from new electronic methods and technological advances. In summary, 3M has an excellent program that monitors EDI accuracy, improves electronic procedures, educates, and continually seeks alternatives to improve and generate commitment for EC/EDI methods. Because of their efforts, 3M is rewarded with a very successful and robust EDI program.

The inherent qualities of the EC/EDI model, if implemented correctly, can lead to successful EC/EDI implementation. These essential, EC/EDI successful traits exhibited by industry can be summarized as follows:

- An implementation plan
- Top management support
- Purchasing support
- Funding
- Dedicated manpower
- Supplier commitment

- Cross functional input and support
- Measurement of results [Ref. 1:p. 3]

If any of the traits listed above are lacking in an EC/EDI implementation plan, EC/EDI will fail, produce poor results, or fall well below EC/EDI expectations. Organizations must have these traits to succeed in EC/EDI implementation. In this respect the model creates a Go/No-Go criteria. If an organization does not wish to expend the resources for such efforts, EC/EDI should not be initiated. Private industry's examples of EC/EDI implementation provides a frame of reference, yardstick and Go/No Go evaluation in which to measure the Marine Corps' implementation of EC/EDI. Chapter V uses these commercial examples to measure current Marine Corps EC/EDI implementation efforts.

V. USMC EC/EDI IMPLEMENTATION EFFORTS

As indicated by numerous commercial EDI examples, firms can and do vigorously implement EC/EDI. Due to the Presidential EC/EDI Mandate and DOD's EC/EDI initiatives, LBO is also attempting to implement EC/EDI throughout the Marine Corps. The next step in this analysis compares U.S. Marine Corps implementation efforts to the EC/EDI model as described in Chapter IV.

A. STRATEGIC VISION AND PLAN

Two critical factors necessary for management support are vision for EC/EDI methods and a strategic plan to reach that vision. A strategic plan focuses and directs EC/EDI implementation efforts. RJR's vision was to "obliterate" the paper process into an electronic process. [Ref. 33:pp. 10-19] Chart 1 reveals more than half of Marine personnel questioned, 53%, indicate an EC/EDI implementation plan does not exist for the Marine Corps. The 40% of respondents who answered "yes" in Chart 1 were unable to express facets of the plan.

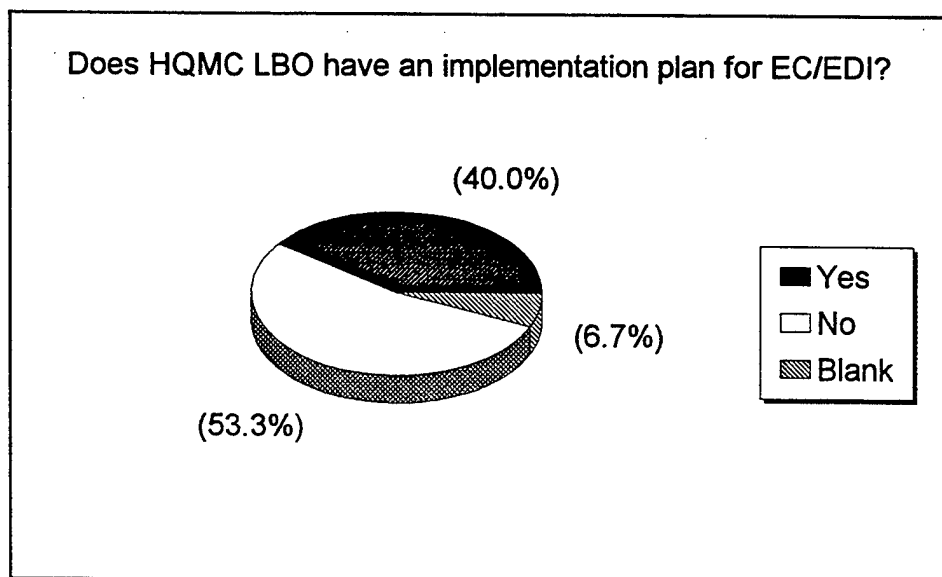


Chart 1

Essentially, 93% do not know an LBO Marine Corps wide EC/EDI plan exists, or do not know what the plan is. Furthermore in Chart 2, only one person answered that the plan's goals were clear and concise. One third, of respondents did not know what

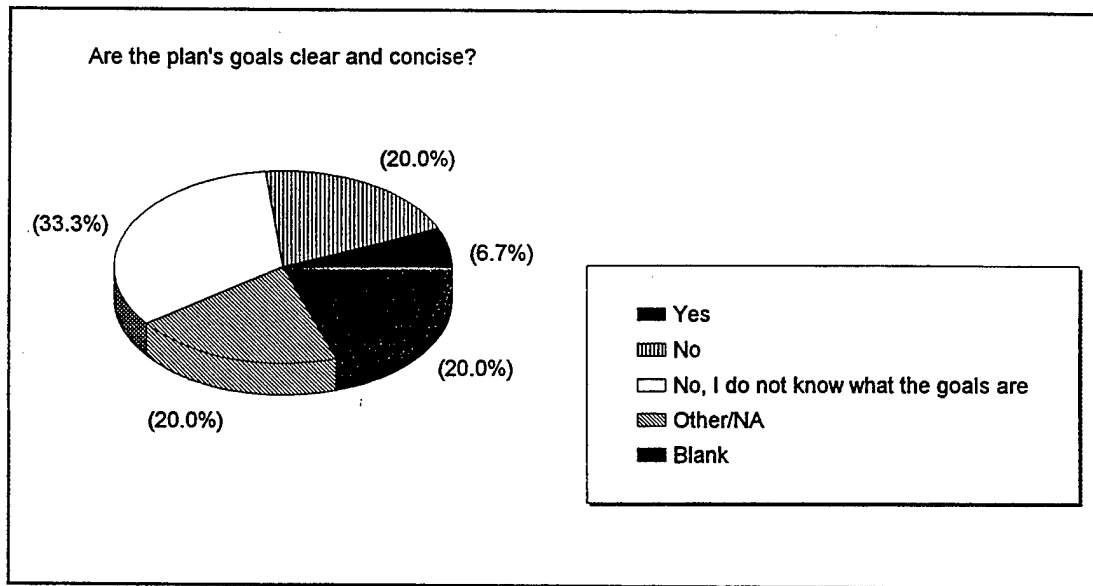


Chart 2

the goals were, and another 20% did not understand the plan's goals. Thus, 53%, do not know or do not understand EC/EDI goals. In essence, LBO lacks a Marine Corps wide EC/EDI vision, EC/EDI implementation plan as well as EC/EDI implementation goals.

Since LBO is perceived as lacking an EC/EDI implementation plan, personnel were asked if local offices have EC/EDI implementation plan or EC/EDI goals. As Chart 3 indicates below, 40% believe their local offices have their own EC/EDI plan. Once again, "yes" respondents were asked to specify aspects of their plan. Again as before, most could not list specific aspects or attributes of their local EC/EDI plan. The following were the only items listed as specific attributes of the local EC/EDI plan:

- Implement as soon as possible;
- Implement EC/EDI;
- FACNET certification.

Thus 40% believe that a local plan exists, but are unsure what it is. Chart 3 also reveals personnel are 13% less likely to admit that their local office does not have an EC/EDI implementation plan. Also in Comparison to Chart 1, a substantial increase in blank responses are present. Individuals are generally unsure about the EC/EDI situation at the local level but are clear on LBO's EC/EDI efforts or lack of efforts. Respondents have a strong opinion whether LBO does have or does not have an Marine Corps wide EC/EDI implementation plan as exhibited in Chart 1. However, over a quarter of the response, 27%, did not feel their office had it's own plan to implement EC/EDI.

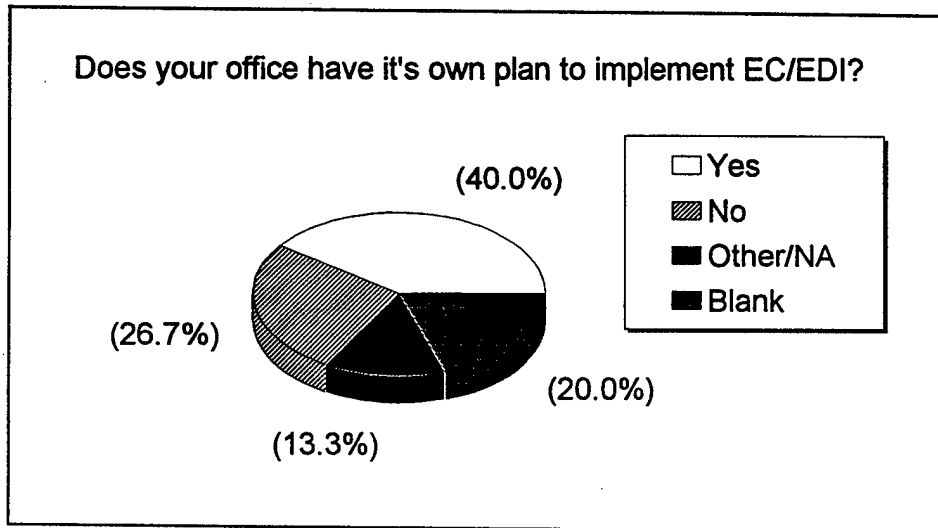


Chart 3

Comparing Chart 3's "no" response to Chart 1's "no" response, personnel are twice as likely to say LBO does not have an EC/EDI implementation plan than their own office. In this respect personnel clearly say that LBO has no plan, but are twice as less likely to admit that their office also does not have a plan. Essentially, 67% do not know a local EC/EDI plan exists, or do not know what the local EC/EDI plan is. Attempting to discover any local EC/EDI goals, more than a quarter of those surveyed, 27%, do not have any goals or do not know of any local EC/EDI implementation goals. Those who felt there were local goals were asked to list specific elements of the plan. Over half of the 73% who stated there were local goals could not state one goal of the implementation plan. Again, contracting personnel believe that there are EC/EDI goals, but do not know what the goals are. All specific responses for local goals are listed below:

- Increase by 5% per year;
- Implement and expand as soon as possible;
- 25%-50% in 1 year;
- Use as much as possible;
- Implement as soon as possible;
- Get FACNET certified;
- 100 EDI buyers per year.

Over a quarter of responses, 27%, do not feel their local office has its own goals for EC/EDI implementation. Essentially, 57% do not know local EC/EDI goals exists, or do not know what the local EC/EDI goals are. Uncertainty in the definition or perception of an implementation plan is also present.

Chart 4 indicates an attempt to define the term "implementation plan" as perceived by the survey group. A majority, 59%, feel the installation schedule to install the hardware and software required for EC/EDI transactions is the implementation plan. Furthermore, no documentation was provided to the author concerning a plan other than an installation schedule. Leadership at LBO verbally confirmed the installation schedule as the implementation plan. Individuals believe installation of EC/EDI equipment automatically makes them EC/EDI capable. This contradicts fundamental successful traits highlighted in Chapter IV. EC/EDI is not solely hardware/software/computer issue as most view EC/EDI in the Marine Corps.

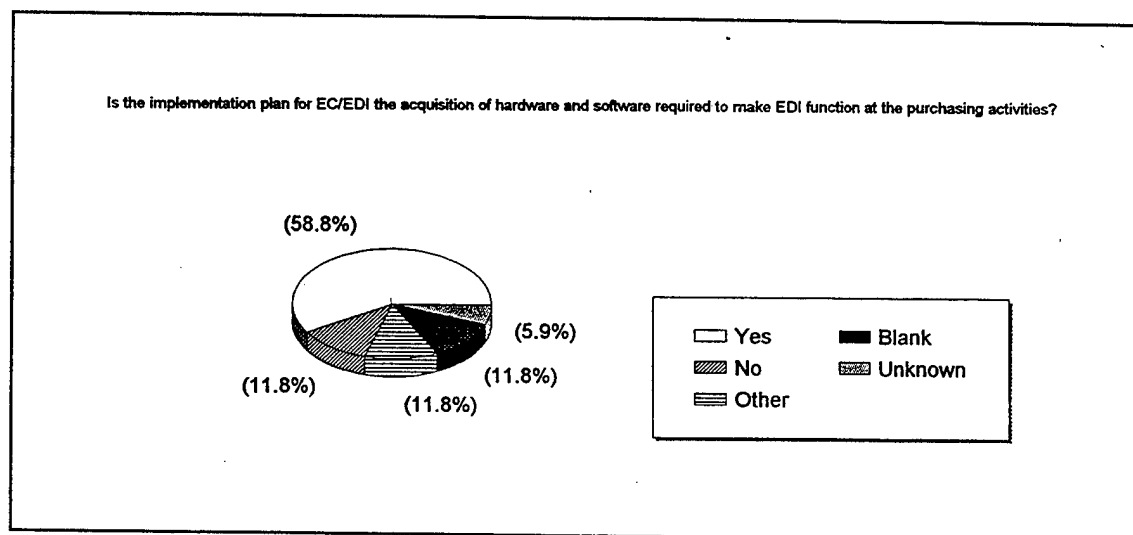


Chart 4

Summarizing the Marine Corps's strategic plan 97% do not know or do not understand LBO's Marine Corps wide EC/EDI implementation plan, 53%, do not know or do not understand LBO Marine Corps wide EC/EDI goals, 67%, do not know or do not understand local level EC/EDI implementation plans, approximately 57% do not know of any local EC/EDI goals, and 59% view EC/ED implementation solely

as a hardware/software issue. Unfortunately, there are no single characteristics, themes, traits, plans, or goals enunciated by any of those surveyed. Most of the Corps' workforce does not understand EC/EDI strategy and implementation concepts as discussed in Chapter IV. Most view EC/EDI solely as a hardware/computer issue. It is evident the Marine Corps has neither EC/EDI vision, plan, or goals as discussed in Chapter IV, nor do they understand the broader conceptual EC/EDI fundamentals of an implementation strategy or plan. Because EC/EDI vision, plans, and goals are the basic foundations for EC/EDI success, the ability to successfully implement EC/EDI within the Marine Corps is in jeopardy. The Marine Corps' EC/EDI implementation efforts are rudderless. The Corps' EC/EDI process lacks vision, direction, purpose, and goals. Based upon the model and industry examples, lack of EC/EDI implementation vision and plans often leads to poor management support.

B. OBTAIN MANAGEMENT SUPPORT

The support for EC/EDI from senior leadership within the Marine Corps and its contracting community is virtually non-existent. In stark comparison, as indicated in Appendix E, the Army's senior procurement and policy executive, Mr. Gilbert Decker, Assistant Secretary of the Army, Research, Development and Acquisition (SARDA) supports DOD and Army EC/EDI initiatives. In a formal EC/EDI directive, Mr. Decker states EC/EDI initiatives will be implemented and used within the Army. Furthermore, he formally establishes policy and procedures to incorporate EC/EDI processes as a standard Army business practice. Thus the Army initiates EC/EDI support from the top senior leadership flowing down to contracting sites. In essence, the Army supports and expects EC/EDI implementation will be accomplished. Written documentation from senior leadership within the Marine Corps specifically supporting EC/EDI initiatives is absent. True, DOD has Ms. Preston and Ms. Smith to help promote EC/EDI, but they are again out of the domain

of USMC contracting authority and policy. It is difficult to garner support for EC/EDI when an implementation vision and plan does not exist. Leaders and managers may support EC/EDI, but they need to understand what is EC/EDI, what is the EC/EDI implementation plan, and how will EC/EDI benefit the Corps prior to granting such support. Another sign of inadequate management support reveals itself in EC/EDI's "champion" within the Marine Corps.

In the Marine Corps, 57% feel there is an EC/EDI "champion." The individual most often viewed as the EC/EDI "champion" within the Marine Corps is Ms. Gail Adams. Both LBO and field contracting offices most often indicate Ms. Adams as the vocal EC/EDI supporter. Unfortunately, the Corps' EC/EDI "champion," Ms. Gail Adams, is not in the contracting authority or reporting chain of command. As indicated in Appendix C, Ms. Adams is a special assistant to Mr. Ledford, Deputy Director of LBO. The contracting chain of command flows from LtGen Brabham, to Mr. Zanfagna, directly to the local contracting officer. Any action, support, or EC/EDI policy from Ms. Adams, as with DOD's Ms. Preston, lacks the respective authority required for Marine Corps contracting offices. Thus there is no impetus or authority to motivate individuals to implement EC/EDI, particularly purchasing personnel and the field contracting offices. Additionally, Ms. Adams is currently attending the Industrial College of the Armed Forces and has been absent from her "champion" position at LBO for nearly 18 months. Her EC/EDI responsibilities have been assigned to Mr. Jim Lee, who is part of the Field Contracting Support Branch.

The decreased level and importance of EC/EDI is reflected in the "hand off" of EC/EDI responsibilities to a lower level of importance and rating. As with Ms. Adams, Mr. Lee also lacks the respective authority for Marine Corps contracting offices as he too is not in the respective chain of command. There is no doubt that Ms. Adams and Mr. Lee are diligent and conscientious workers. However, because

the EC/EDI responsibilities were delegated to Mr. Lee in addition to his other duties, the time spent on EC/EDI issues has decreased within LBO. For all practical purposes, EC/EDI has been demoted to a collateral duty, to be worked on only when absolutely necessary. In this regard, Marine Corps leadership and management does not support EC/EDI efforts as their successful commercial EC/EDI counterparts do. The low priority of EC/EDI issues within LBO, not unique to LBO, is reflected in the LP functional organization. Whereas LBO's EC/EDI leader is presently four levels below the functional manager/leader, Mr. Zanfagna, LP's EC/EDI Program Manager Officer (PMO) is three levels below the Functional manager/leader, BGen McKissock. The PMO billet, however, is discussed later in this chapter.

C. ESTABLISH PURCHASING SUPPORT

One key indicator for EC/EDI purchasing support is current EC/EDI transactions. Only one office presently uses EC/EDI methods. This EC/EDI capable office, as indicated in Chapter III, uses a version of CACT's SAACONS system. Although the poor results can be due, in part, to BCAS/MADES technical problems associated with the installation of EC/EDI, there is not any pro-active action on behalf of EC/EDI. Lacking guidance, Marine Corps implementation lacks a sense of urgency, or focus that successful plans develop at the purchasing level to make EC/EDI occur. Pressures of profitability, cost savings, and time are also not present as compared to commercial EC/EDI examples, despite the approaching Presidential Mandate in 1997. Without any pressure to move forward, implementation is at a standstill. Only one site is able to conduct EC/EDI since the EC/EDI initiative began in 1993. In contrast, the Army has 127 sites as of January, 1996. [Ref. 58] The impression and implied behavior within the Marine Corps is quite simple; EC/EDI is not a priority within the Marine Corps. If the Commander in Chief's EC/EDI Mandate does not motivate Marine Corps personnel to implement EC/EDI, what will? Another aspect of purchasing support lies in the BCAS/MADES equipment.

The survey of purchasing personnel loudly and clearly reveals its doubts of the MADES EC/EDI capabilities. These doubts strongly inhibit any support for EC/EDI at the user level. Chart 5 reveals nearly half of those surveyed, 46%, indicate MADES will not meet their needs for EC/EDI activity. Another 23% do not know if EC/EDI will work in their office. Combining these two groups together, 69% of the purchasing community either do not feel MADES will meet their EC/EDI needs, or do not have confidence MADES will meet their EC/EDI needs, or are not being informed that MADES can meet their EC/EDI needs. In essence, 69% do not feel the present EC/EDI tools will be able to meet their EC/EDI needs. This is not surprising as Chapter III reveals a general dislike for BCAS/MADES. Low expectation of BCAS/MADES leads to low expectations of EC/EDI due to its inherent association with BCA/MADES. How EC/EDI initiatives are viewed, in a negative or positive fashion, is yet another aspect to purchasing support.

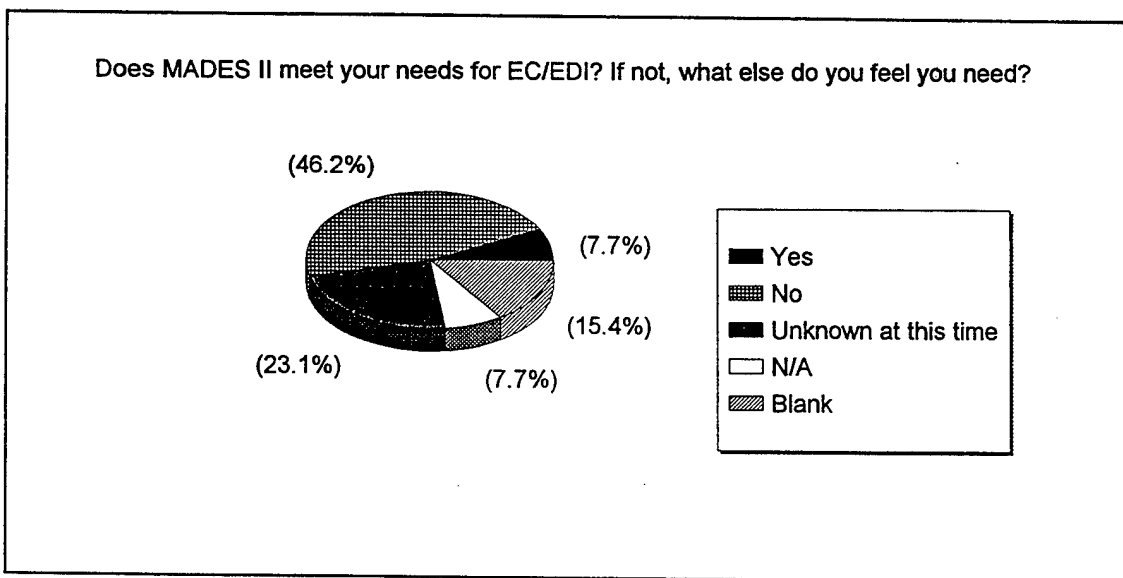


Chart 5

Chart 6 reveals the majority of personnel, 61%, view EC/EDI positively. Slightly more than one quarter, 28%, however, view EC/EDI negatively. Although viewed very positively, LBO has only one functioning EC/EDI capable site in the

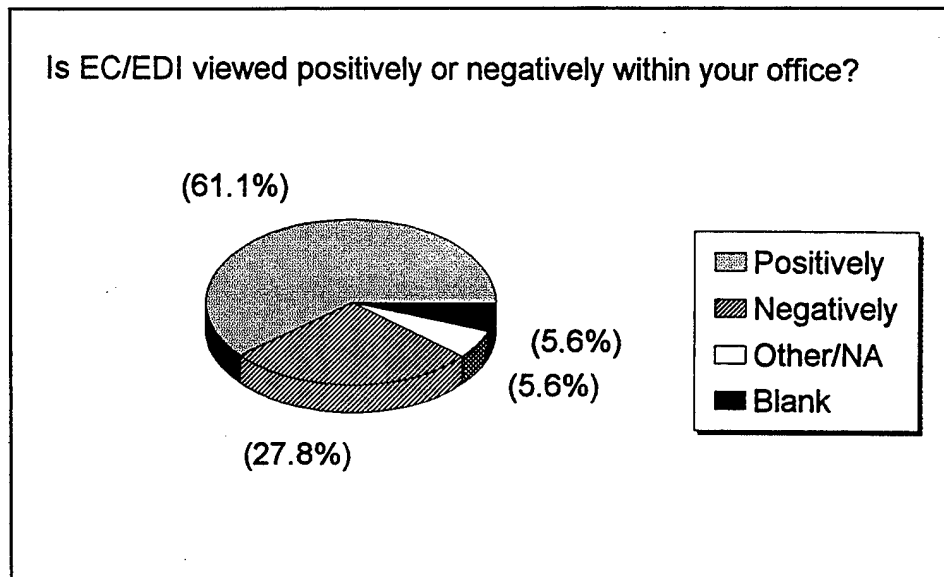


Chart 6

entire Marine Corps. Strong verbal support expressed for EC/EDI but very little, if any, action supporting that positive view may be indicative of what author and Duke Professor Fish labeled as "professional correctness." [Ref. 58] Originating from debates of "political correctness," "professional correctness" espouses one "authorized" viewpoint associated within the workplace, such as DOD's and Ms. Colleen Preston's avid and positive support of EC/EDI and FACNET. Any disagreement or negative view of EC/EDI would be considered "professionally incorrect." Many interviews for this research, for example, were agreed upon only on conditions of anonymity due to concerns that their comments would cause them harm within their office. Yes, there is strong verbal support for EC/EDI, but successful EC/EDI implementation requires more than just verbal support. Successful

EC/EDI requires positive action by the entire organization. Another aspect of concerning EC/EDI is its perception as a threat within the contracting community.

As Chart 7 indicates, nearly 58% of respondents view EC/EDI as a threat to their profession, whatever that threat may be. If EC/EDI is viewed in such a positive manner how does one account for the strong perception of EC/EDI as a threat within the contracting community? The view of EC/EDI as a threat contrasts the positive verbal support indicated in the last question. The view of EC/EDI as a threat also bolsters Fish's "professional correctness" arguments. A better representative sentiment of EC/EDI within the Marine Corps may view EC/EDI as a threat. Given Chapter II's Cats-Baril and Thompson example as well as other authors such as Schein, cultural issues are indeed obstacles which must be overcome in EC/EDI implementation. Recent articles point to fear as a significant barrier to EC/EDI implementation. "EC/EDI barriers may be more sociological than technological. Organizations may choose to ignore benefits and advantages to EDI. Technophilia (sic), lack of support from senior management, resistance from within an organization

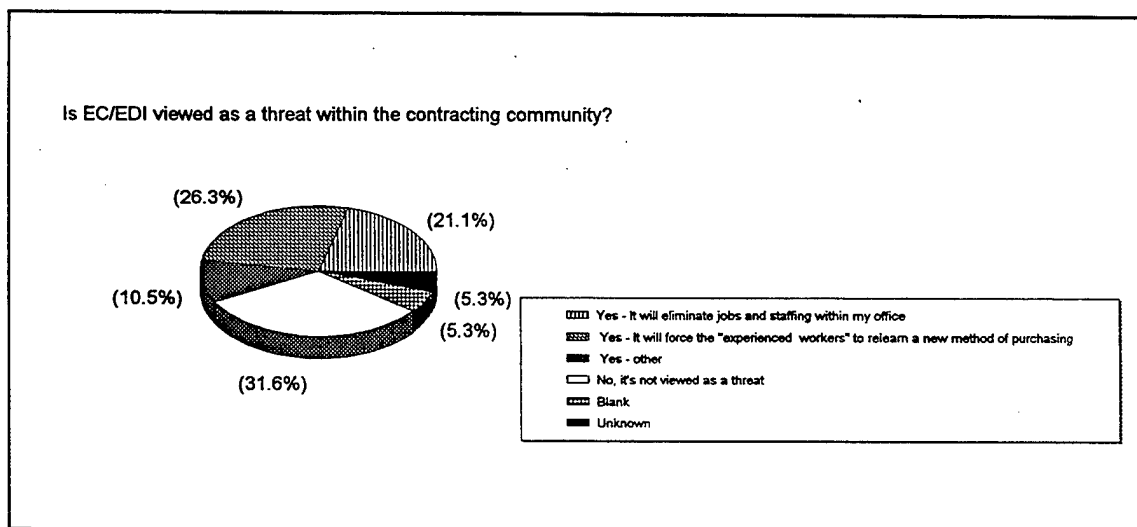


Chart 7

and a piecemeal mentality" prohibit acceptance of EDI. [Ref. 59] Fear and the perception of EDI as a threat within the contracting community is real. To counter and overcome such views, pro-actively managing change from day-to-day, constant communication, and distribution of information is necessary. Purchasing support is always very important for EC/EDI success because of their front line relationship with vendors. If purchasing does not view EC/EDI as an important aspect in procurement, their vendors may also reflect a similar view.

D. VENDOR SUPPORT

Vendor support of EC/EDI reflects an unwillingness to use EC/EDI methods as Chart 8 indicates. EC/EDI is not a priority or a concern among vendors. More than half of the vendor base, 53%, has not implemented EC/EDI. Furthermore, more than a quarter of those surveyed, 27%, do not know if their vendor base is moving towards electronic trading partner relationships. Only 20% of responses, represented by the sum of the three small slices, indicate vendors have made any effort to move toward EC/EDI capabilities. EC/EDI is not a priority for purchasing personnel and

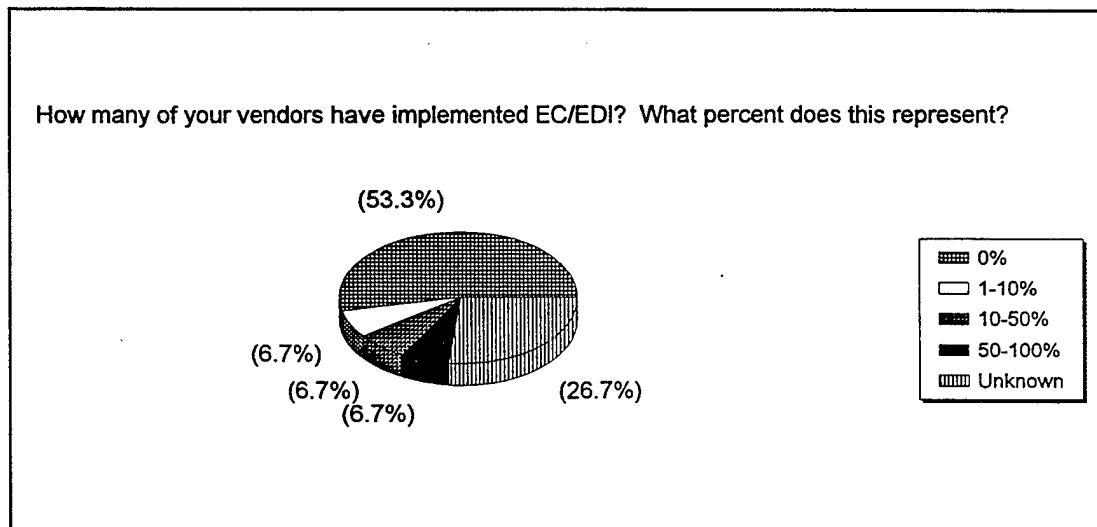


Chart 8

is not a priority for vendors. Additionally, 27% of the survey group simply do not know what their vendors are doing in the area of EC/EDI. The trading partnership concept, one of close affiliation and cooperation necessary in EC/EDI, may not be present in the Government-vendor relationship or may be difficult to develop given this response. Close buyer/supplier relationships characteristic of EC/EDI and JIT processes is quite different than Government's "arms length" supplier/vendor relationship. A lack of interest, concern, or knowledge of supplier EC/EDI capabilities also indicates problems of measurement, control and management issues which are discussed later in this research.

The perception of EC/EDI amongst vendors is illustrated in Chart 9. Contrary to the overwhelming positive support expressed by personnel in Chart 6, vendor EC/EDI support is weak. Vendor's positive views of EC/EDI are nearly 40% lower than their Government counterparts. Only 25% of those surveyed believe vendors view EC/EDI positively compared to a positive response of 61% in Chart 6. Over a

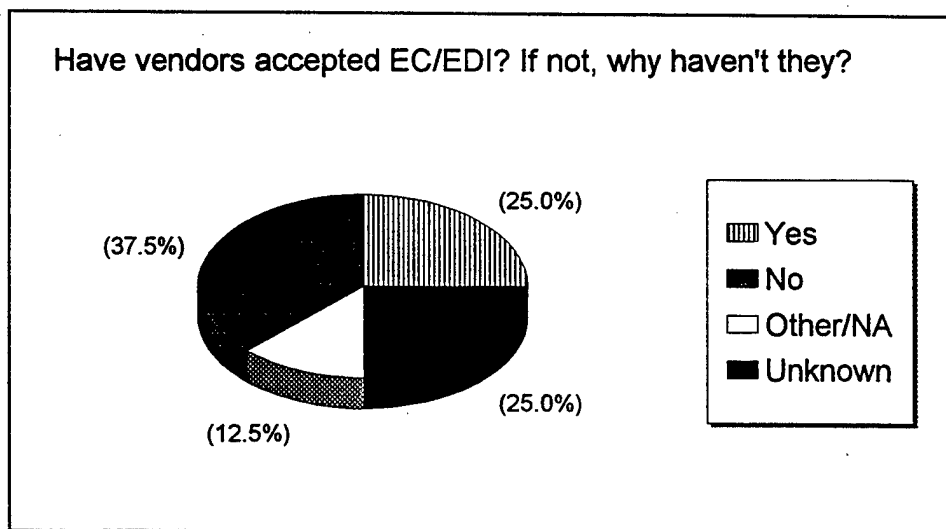


Chart 9

third, 38%, think vendors view EC/EDI negatively. Whereas more Marine personnel view EC/EDI positively than negatively, vendor negative views outnumber vendor positive responses. A wide disparity exists between government's positive view and the vendor's negative view towards EC/EDI. This trend continues when asked if vendors accept EC/EDI.

Vendor EC/EDI acceptance also is not strong. The belief that more vendors do not accept EC/EDI as compared to those that do accept EC/EDI, closely parallels the negative viewpoint of EC/EDI. 38% of vendors have not accepted EC/EDI. The three items cited as reasons for non acceptance were:

1. Excessive requirement;
2. Cost prohibitive;
3. Will only accept EC/EDI when local office switches to EC/EDI.

Interestingly one of the factors prohibiting EC/EDI growth among vendors is the non-use of EC/EDI by Marine Corps purchasing personnel. Vendors are forestalling investments in EC/EDI until forced to move in that direction. If EC/EDI is viewed positively by Marine Corps personnel, clearly that viewpoint is not being communicated to the vendor base. Vendors also appear to view EC/EDI for use only with local bases. EC/EDI expands local vendors into national vendors, greatly expanding the opportunities for increased business transactions. A strong and persuasive case for EC/EDI benefits targeted at the vendor community must be conducted by all Marine Corps personnel.

E. DEVELOP CROSS FUNCTIONAL COMMITMENT TO EDI

Survey results indicate superiors overwhelmingly support EC/EDI. 87% of respondents indicate their superiors support EC/EDI. With such overwhelming support one would think EC/EDI activity would be visibly noticed and

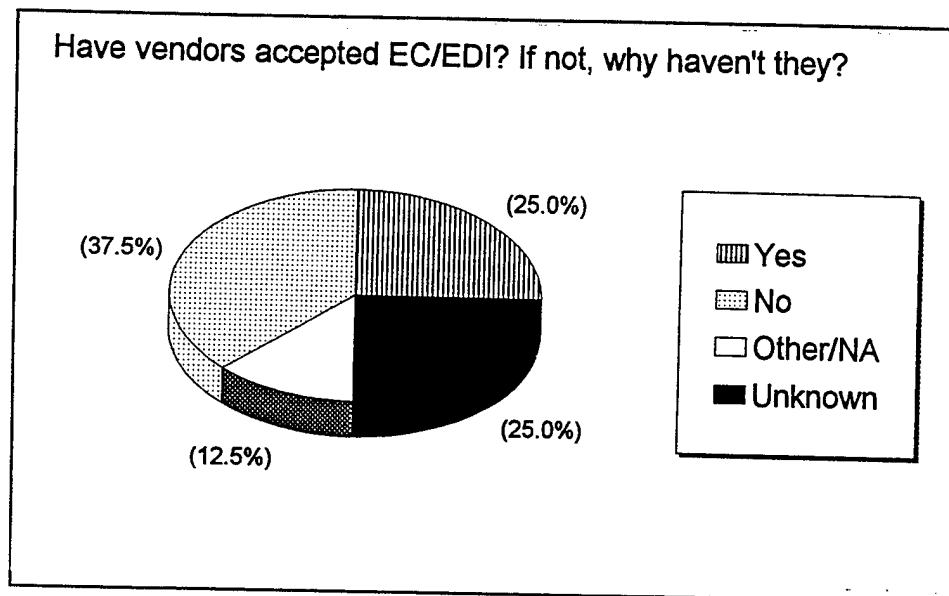


Chart 10

conducted within the Marine Corps. Unfortunately, only one office currently conducts EC/EDI. The USMC I&L Organizational Chart in Appendix C, provides a graphical view where senior cross functional support must begin. Senior level support starts at the top of each cross functional organization. However, neither LtGen Brabham nor his functional subordinate counterparts affected by EC/EDI, BGen McKissock, BGen Bratten, Col Hansen, or especially Mr. Zanfagna, head of LBO, have issued any written support or directives for EC/EDI. Whereas the Army defined EC/EDI support and the expectations of EC/EDI implementation in writing, the Marine Corps has neglected EC/EDI.

Lack of cross functional support also revealed itself in other areas of the survey. Chart 11 reveals what LBO could do to help support local offices in their conversion to EC/EDI. The response was fairly consistent and equally spread among the choices. Three choices often selected, representing 57.1%, are inherently cross

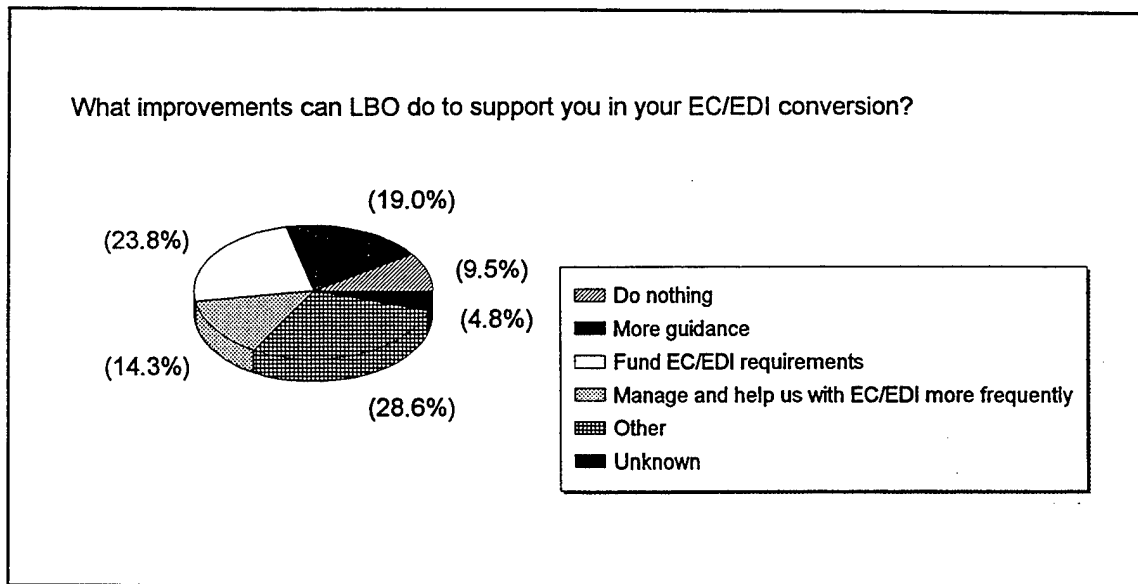


Chart 11

functional issues. These cross functional issues are: more guidance, funding, and management of EC/EDI. Funding of EC/EDI initiatives are resource allocation questions that all I&L cross functional leaders, particularly the EC/EDI PMO, LP and LB branches must coordinate. Due to declining defense budgets and an unwillingness by senior EC/EDI DOD officials to fund Marine Corps EC/EDI efforts, any future EC/EDI funding must begin within I&L. [Ref. 61] Therefore, discussions and actual funding of EC/EDI initiatives will become difficult cross functional efforts. Funding EC/EDI efforts may cause a reduction in the budgets of LF, LP, and an LC divisions. It is fair to assume such efforts may also be resisted by the various cross functional leaders. Managing EC/EDI is also an inherently cross functional endeavor since actions necessary to properly manage EC/EDI implementation on a daily basis affects LB, LF, an LP personnel. More guidance of course refers to the policy and procedures EC/EDI requires for success, which has inherent cross functional Marine

Corps wide effects. Interestingly most "other" responses, 29%, indicated LBO was "in the way" or "blocked" offices from progressing and converting to EC/EDI methods. This viewpoint is particularly alarming as LBO is perceived as the inhibitor of EC/EDI implementation not the promoter of EC/EDI. Due to the numerous responses, LBO's prevention of EC/EDI initiatives is not an isolated view. One concrete example given in support of such a viewpoint relates to a local initiative for an electronic bulletin board system. LBO would not allow a local office to operate a BBS system, despite specific FAR language supporting electronic use as well as a recent DISC GAO protest, won by DISC, which specifically supports electronic dissemination and use of an electronic bulletin board for its vendor base. Local offices may support EC/EDI but this does not help implement EC/EDI unless the entire organization, particularly leaders in cross functional organizations within the Marine Corps, support EC/EDI implementation in words, deeds, and commitment of resources to accomplish implementation.

Lack of support, dedication, and commitment by LBO is clearly stated in the survey's response. 60% do not feel LBO is responsive to EC/EDI needs or requests. Only one person answered "yes" to this question. This is a loud and clear signal that appropriate personnel are not committed to the necessary steps to make EC/EDI successful. Interviews within I&L's cross functional areas point out difficulties in obtaining information, coordinating and cooperating with LBO. LBO is not viewed favorably amongst its cross functional peer organizations. Other cross functional personnel do not view EC/EDI as a priority due to LBO's poor response or lack of effort concerning EC/EDI issues. If LBO is not committed to EC/EDI within their own organization, why should other cross functional areas commit to EC/EDI? LBO must lead by example, commit to EC/EDI, and conduct themselves as if EC/EDI is a priority in order for other cross functional organizations within I&L to share that

commitment. Another example of cross functional issues concerns the ability to invoice and make electronic payments using EDI transactions.

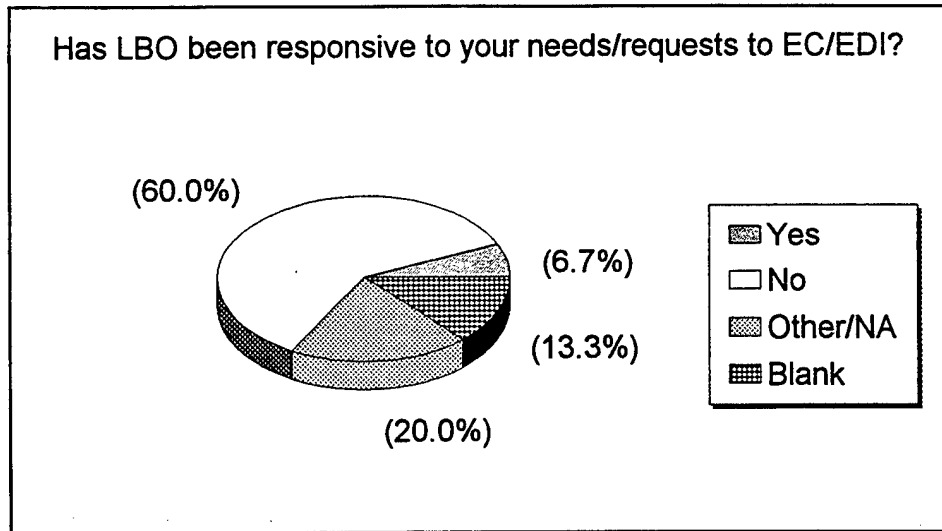


Chart 12

Industry achieves the greatest success and efficiencies created through EC/EDI integration. The Marine Corps, however, is isolating EDI within the procurement arena. In many respects EC/EDI efforts are carried forth in the traditional stovepipe military procurement tradition. For example, personnel involved with future Marine Corps FEDI issues are unaware of any LBO EC/EDI efforts, particularly with respect to SPS. Information concerning successful EC/EDI implementation through EC/EDI integration is also not provided to field personnel.

The lack of EC/EDI integration comprehension and importance is alarming. Most personnel, 93% of respondents, are unaware of any EC/EDI integration efforts. The importance of EC/EDI integration is neither emphasized, pursued, nor managed within the Marine Corps. The Marine's DFAS office in Kansas City, for example, is presently a test site for an electronic document management system. DFAS's efforts

includes an integrated EC/EDI process. [Ref. 62] DFAS views FEDI as the standard business process of the future. DFAS has staked its strategic vision on FEDI usage and has committed substantial resources towards FEDI capabilities. Unfortunately DFAS Kansas City does not know what LBO is doing in the implementation of EC/EDI or SPS which facilitates FEDI procedures. DFAS representatives did not know what SPS was, what it would do, or that it will be tested by LBO at a Marine Corps site within the year. Since SPS will be mandatory for every purchasing office in the Marine Corps, it is vital to develop cross functional support and input, such as the Marine's DFAS EC/EDI expert, into the process. SPS includes substantial EC/EDI capabilities inherent to the system, which integrates the purchasing-payment capabilities within the Marine Corps. Therefore Marine DFAS participation in an SPS tests is a crucial towards EC/EDI integration efforts. Integration is a vital EC/EDI trait that Marine personnel do not know is part of the EC/EDI implementation process. The lack of integration efforts may also be a byproduct of poor EC/EDI education. An integrated commitment and effort for EC/EDI is commonly associated with a firm EC/EDI educational base. Therefore, the next topic of discussion is education.

F. DEVELOP EDI KNOWLEDGE, EXPERIENCE, AND EDUCATION

The core aspects of developing EC/EDI knowledge and experience is through education efforts. Due to problems associated with the MADES EC/EDI capabilities, a true indicator of Marine Corps EC/EDI implementation efforts manifests itself in the Corps' education efforts. Technical problems encountered in EC/EDI implementation are not associated with education efforts, and certainly technical issues can not be blamed for lack of an EC/EDI education process. Technical difficulties are independent of EC/EDI education efforts. Hence, the Corps' development of EC/EDI knowledge and experience can be viewed as the manifestation of the Marine Corps'

lack of EC/EDI efforts, management, leadership, support, and commitment to EC/EDI.

Because EC/EDI is relatively new to Marine Corps personnel, one aspect vital for USMC activities is education of the workforce. Education also focuses on two distinct groups; Marine Corps personnel and the vendor base. Any education efforts must address these two groups. Unfortunately there isn't a Marine Corps wide EC/EDI education/training program for these two groups. Because there is a lack of an education program, there is a lack of both knowledge as well as experience necessary for EC/EDI implementation.

As discovered earlier in this chapter, incomprehension of an implementation strategy is an indicator of an EC/EDI knowledge deficiency. The survey reveals 47% of respondents did not have any documentation concerning the benefits of EC/EDI. Those that answered "yes" in this question were asked to list the documents available. The only response listed "brochures" as the material on hand for EC/EDI documentation. Most replies did not or could not specifically list what EC/EDI documentation was available at the local level. Brochures are not EC/EDI documentation. All personnel currently surveyed lack any documentation concerning the benefits of EC/EDI. Documentation of EC/EDI benefits typically contain successful examples of EC/EDI or case studies of EC/EDI implementation. An excellent example of documentation is EDI World Institute's, The Why EDI Guide for Small and Medium-Sized Enterprises. This particular documentation contains twelve case studies on EDI implementation and is particularly applicable given EC/EDI initiatives are focused on benefiting small businesses. Thus any desire or attempt to increase EC/EDI knowledge, experience, or provide documentation to the vendor base concerning the benefits of EC/EDI is thwarted by the lack of EC/EDI

documentation. Lack of education efforts are also revealed in many other areas of the survey.

A sizable portion of respondents, 40%, lacked EC/EDI training material. Furthermore, during visits to three contracting, only one office had DOD's Your Introduction to Electronic Commerce: A Handbook for Businesses, of which only one copy was available for the entire office. DOD's Your Introduction to Electronic Commerce: A Handbook for Procurement Personnel published by DOD's EC/EDI office was not present at any of the visited sites. The author personally gave his copies of these books and an EC/EDI tape developed for DOD use to Marine contracting personnel. At present LBO has not developed any standard EC/EDI education/training guides for contracting personnel or vendor use. They also have not facilitated distribution of present DOD EC/EDI education material. Local offices are also not developing any EC/EDI education/training guides. From the viewpoint of local offices, such EC/EDI education/training guides should be developed by LBO at HQMC in order to create a standard knowledge base for all offices to use. The general consensus indicated LBO is implementing EC/EDI, and therefore also needs to develop necessary training and education material in support of their implementation efforts. Development of LBO EC/EDI material would also create a standard reference base to begin EC/EDI education efforts at little or no cost to the local offices. Respondents of the survey were very adamant on receiving education and training materials.

As indicated in the frequency Chart 13, nearly every respondent wanted more than one of the following items:

- Books about EC/EDI
- Tutorials

- Current EC/EDI articles
- Vendor material to help sell EC/EDI to local businesses
- Comprehensive training packages

The chart also reveals the most requested types of material are EC/EDI tutorials and a comprehensive training package for EC/EDI. Thus, offices

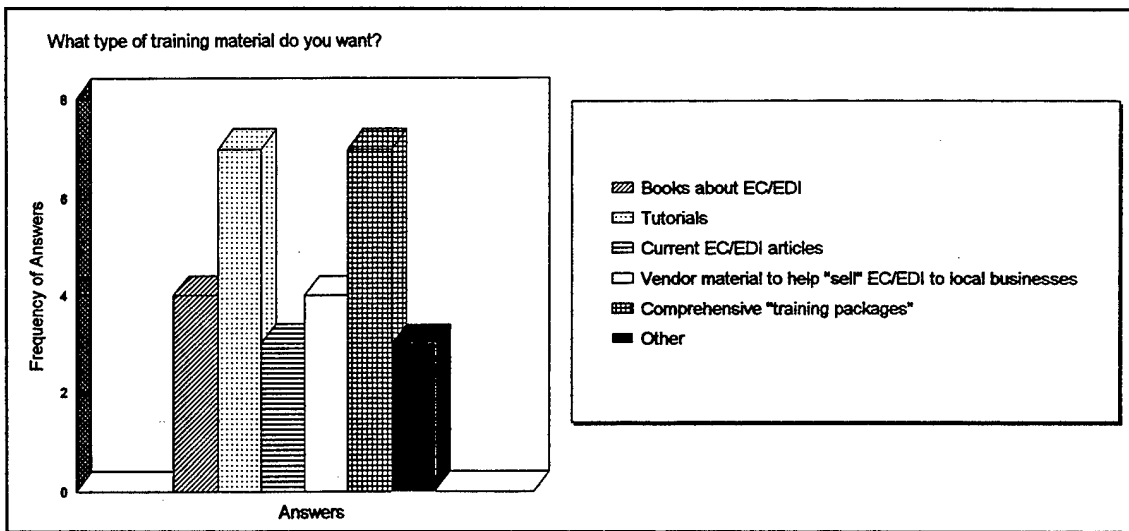


Chart 13

recognize the need for EC/EDI education materials, but do not have the funds, expertise, or time to obtain appropriate EC/EDI material. Another option to EC/EDI education is EC/EDI conferences.

The opportunity for an EC/EDI conference to educate vendors as well as purchasing personnel also reveals lack of Marine Corps commitment to EC/EDI education efforts. Nearly half, 47% of the offices have not had a conference in their area. The only conference held by Marine Corps activities occurred in the test pilot site, Quantico. Many of the 53% positive responses indicated they used a local Navy

contracting office's EC/EDI conference as their conference opportunity. Many offices did not know the status of LBO directed Marine Corps EC/EDI conferences and chose to use the Navy's conference as an opportunity for their vendors. Local offices also did not have to fund any of the Navy's EC/EDI conferences.

As indicated in Chart 14, 47% do not know when an LBO conference would occur. Only one person indicated knowledge of a conference. Initially, Marine Corps procurement personnel and offices were told EC/EDI conferences and experts would be contracted out and provided by LBO. LBO would manage all EC/EDI conferences. Local offices need only advertise the conference to their vendor base. Local offices also would not fund any of the conferences. Over time and several iterations, the conference framework changed to its current status. Local offices are responsible for their own conferences. LBO will not plan, participate or fund conferences. Local offices are left up to their own devices to manage their EC/EDI conferences, educate their personnel and their vendors without any help or funding. Because of this dilemma, offices are not educating or promoting EC/EDI.

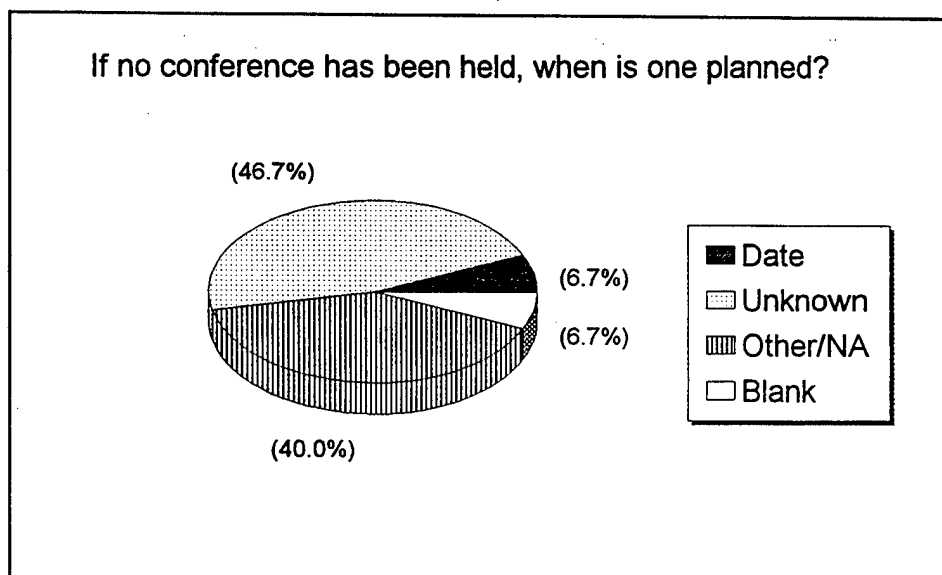


Chart 14

Chart 15 reveals 73% of respondents are not actively pursuing EC/EDI education efforts with their vendors. Contracting Officers find themselves in a frustrating and untenable position. They must educate their personnel and their vendors without EC/EDI material, EC/EDI knowledge, EC/EDI experience, EC/EDI resident expertise, or EC/EDI funding. In this respect, the Marine Corps's education efforts exhibits little or no support, dedication or commitment to EC/EDI. Education is necessary to gain experience. However EC/EDI education material is necessary to obtain an EC/EDI education. Material required for EC/EDI education and experience is presently not available to Marine Corps personnel. Thus vendor education of EC/EDI at the local level is not possible. Efforts are neither focused in obtaining or developing education materials, nor is the Marine Corps willing to outsource the expertise necessary to educate those who must have the EC/EDI education such as purchasing personnel and vendors.

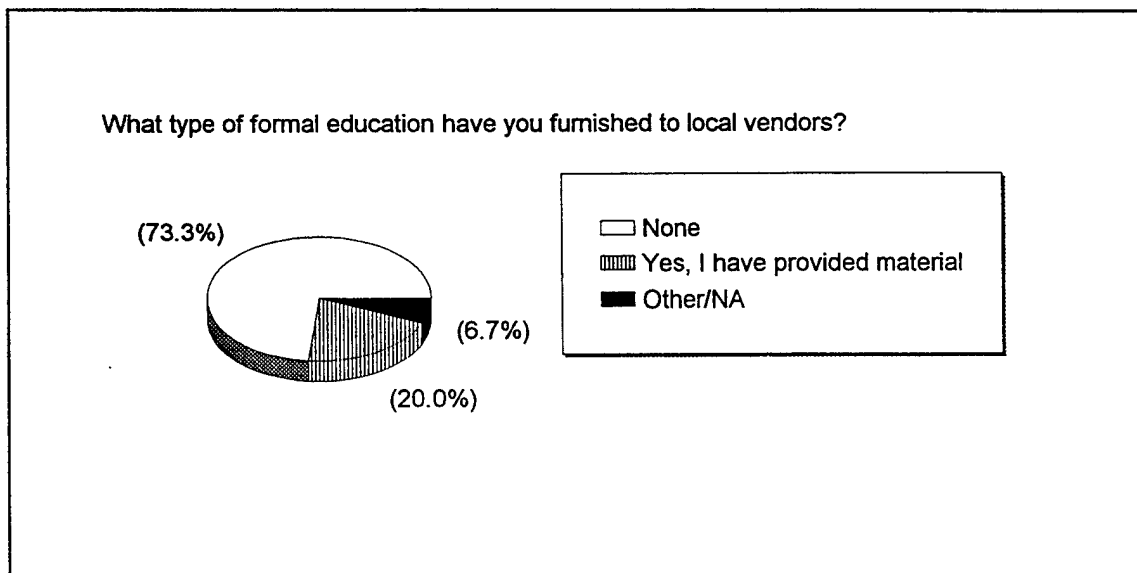


Chart 15

G. CHANGE POLICY AND PROCEDURE

One elusive aspect of EC/EDI within DOD as well as the Marine Corps concerns EC/EDI policy. Other than EC/EDI references located in the FAR, no EC/EDI policy letter or statement currently exists. When asked if a Marine Corps Order (MCO) or policy letter (DOD, Navy or USMC policy letter) exists concerning implementation or use of EC/EDI methods, 47% responded no such policy exists. Only 27% mentioned that a policy exists. "Yes" respondents were again asked to specify the policy letter. In a similar fashion, the only statement concerning policies were "general" policy letters. No one could specifically refer to a policy reference or order that addresses EC/EDI. No policy letters were obtained or forwarded in the investigation of this research. A formal policy letter for EC/EDI does not exist. One particular issue which entered into this question concerned the Navy's moratorium on all EC/EDI activity.

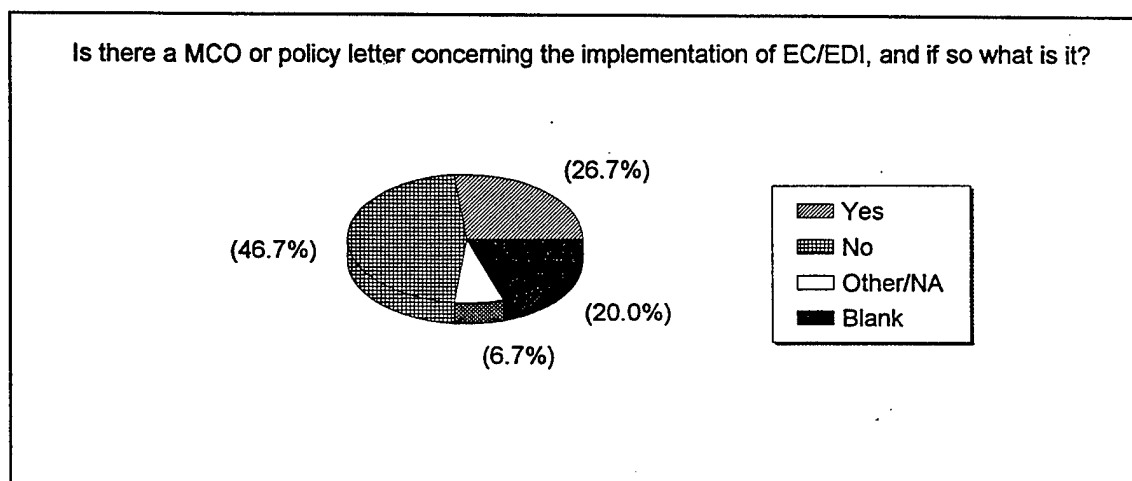


Chart 16

As seen in Appendix D, the Marine Corps does fall under Navy procurement policy. The Navy issued a temporary moratorium on EC/EDI activities for several

reasons, of which some are unresolved legal ramifications and issues such as lack of trading partner agreements, unworkable and unenforceable central contractor registration procedures, and DISA's inability to ensure procurement integrity within the FACNET architecture. Because of this, several Marine activities have halted all EC/EDI activity citing the Navy position as policy to halt EC/EDI activity. LBO, on the other hand, states the Navy moratorium has no effect on any Marine Corps activities. The Marine Corps uses the Air Force's BCAS/MADES system and as such are not part of the moratorium. The Navy uses other systems which are not integral to the Marine Corps EC/EDI MADES process. Unfortunately this was not communicated to the offices and Marine Corps personnel. In one office, the moratorium "policy" was stated as the reason for halting any efforts for EC/EDI activity. It was the only "policy" letter referred to during this research on EC/EDI within the Marine Corps. Again, lack of ownership in the EC/EDI implementation, lack of established clear leadership for EC/EDI implementation, as well as coordination and focus of effort that policy and procedures bring to implementation are inhibiting the implementation of EC/EDI within the Marine Corps. Lacking any policy or guidance on EC/EDI, the Navy moratorium is interpreted as policy or as an excuse to stop all EC/EDI activity in the field. Lacking clear EC/EDI policy and guidance, offices interpret EC/EDI action, as they are allowed to do, in the manner they determine is appropriate. Field offices typically make decisions based upon the given current level of material, education, and knowledge of EC/EDI. Unfortunately, these items are the very items that many of the offices lack. Just as there is policy and guidance to topics such as small business set asides or disadvantaged businesses, there is a need for corresponding EC/EDI policy to aid contracting officers in their decision process. The Marine Corps currently lacks such EC/EDI policy or guidance.

H. ORGANIZE FOR EDI

Two essential principles for EDI organization are clear leadership and efforts that are organized and coordinated in a cross functional manner. Presently Marine Corps efforts violate these principles. More than half of the survey group, 53%, did not know the PM for EC/EDI within the Marine Corps. Nearly all of those who said they knew the PM, stated Ms. Adams, or Mr. Lee as the EC/EDI PM. No one, 0%, knew the correct EC/EDI PM within the Marine Corps. The billet of EC/EDI PMO, recently re-assigned in February 1996, is Mr. Ron Tyler of the LPS branch. The EC/EDI PM billet and responsibilities, as with Mr. Lee, is in addition to his other duties and responsibilities. Thus, the PMO within the Marine Corps has been delegated to a collateral duty status, to be worked on only when absolutely necessary. The original PMO, Mr. Heasley, confirmed little or no work occurred on EC/EDI issues since January, 1995. In discussions with Mr. Taylor shortly after assuming his EC/EDI PMO billet and responsibilities, the author quickly discovered. Lee had no previous experience with EC/EDI efforts. Mr. Taylor was not aware of the EC/EDI Presidential Mandate approaching in 1997. Not only is there little management support, as evidenced by the lack of any full time dedicated EC/EDI personnel, but no one knows who to turn to or who is in charge of the EC/EDI implementation. The rapid change-over in leadership billets, as Cats-Baril and Thompson indicated, is a factor contributing to the poor efforts of USMC EC/EDI implementation.

Another aspect promoting confusion concerns LBO's EC/EDIs' point of contact (POC). As indicated at 3M, an EDI procurement team was organized and firmly established as the sole EC/EDI POC for all issues related for EC/EDI. 3M created a one stop shop for all EC/EDI needs. All efforts, problems and questions funneled through the procurement team. The Marine Corps, however, has difficulties concerning who is the EC/EDI POC. Lack of clear leadership and ownership

confuses contracting offices as to who is really in charge of EC/EDI within the Marine Corps. Is the PM shop responsible for EC/EDI implementation or LBO? This question was never satisfactorily answered by LBO or the PMO. The Army has a LtCol in charge of EC/EDI who reports directly to Mr. Decker in SARDA. The Marine Corps lacks such organizational support structures. Furthermore, one third of all respondents, 33%, do not know who the POC for EC/EDI is at LBO. Surveyed individuals who indicated a POC generally listed one of the following individuals: Ms. Adams, Mr. Lee, and Ms. Cordle. All three can be seen in the I&L Chart in Appendix C. The frequency of the names was equally spread amongst the three individuals. Some respondents may have confused the POC as the "champion," Ms. Adams. If surveyed personnel were not confused with the selection of Ms. Adams as the POC, field offices have not done any EC/EDI related work over the past 18 months since Ms. Adams has been absent from her duties during this time period. Respondents would have known the POC changed had they attempted to contact her on EC/EDI issues. The Marine Corps also is not developing its own EC/EDI resident experts, which means the POC is not current on EC/EDI issues or problems. All three of the listed individuals are not dedicated solely to managing EC/EDI issues. EC/EDI is a collateral duty, not a full time management position. As indicated earlier, 93% do not know of any cross functional efforts with EC/EDI. This certainly reveals lack of leadership, coordination, cross functional support, weak EC/EDI implementation traits, and poor EC/EDI implementation management. Most of these issues are a result of the Marine Corps' current organization for EC/EDI. The present EC/EDI organizational structure weakens implementation, inhibits cross functional support, and is a significant factor of the Corps' poor EC/EDI implementation results.

In many respects, EC/EDI is looked upon as just another way of continuing the Corps's present process, albeit electronic. This violates the basic premise of business process re-engineering of EC/EDI. This is made clear in the survey as 47% of

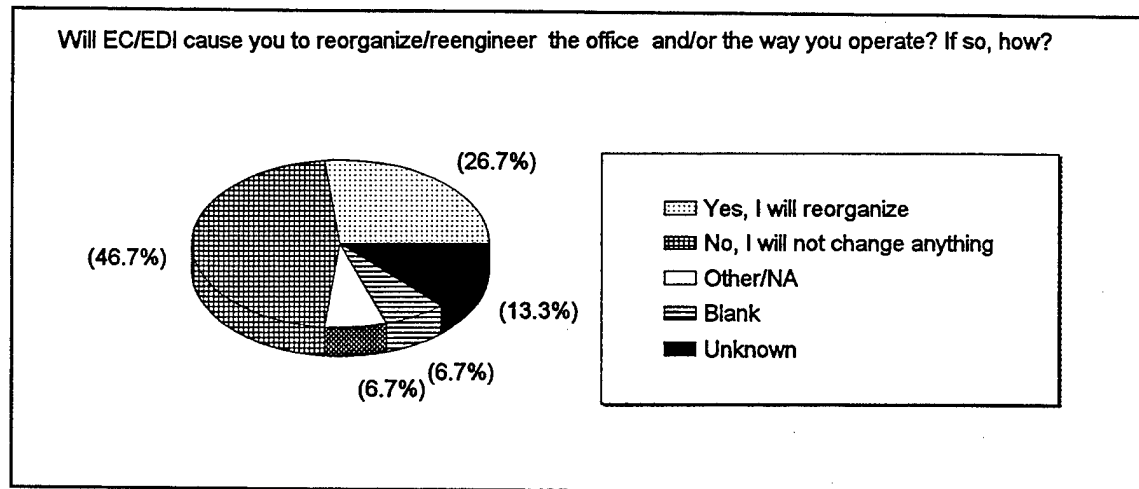


Chart 17

respondents indicate EC/EDI will not change the process within their office. Only a small portion, 27%, anticipate changing the way they operate. As indicated by industry, this is a fundamental flaw that will not lead to successful implementation or use of EC/EDI within the Marine Corps. The paper process will not be improved, merely transformed to an electronic process. As in RJR's example, a 17 page payment process was reduced to a two page electronic payment process. Interestingly, the perception of what EC/EDI will do for manning levels is not indicated by industry. Industry has reduced staffing or more frequently reallocated personnel to other tasks within the department. Chart 18 reveals 40% of respondents believe EC/EDI will either have no effect or increase the staffing/manning levels. Additionally, 14% do not know how EC/EDI will affect their organization. Clearly the lessons of EC/EDI and the effects of EC/EDI implementation are not reaching those affected by EC/EDI.

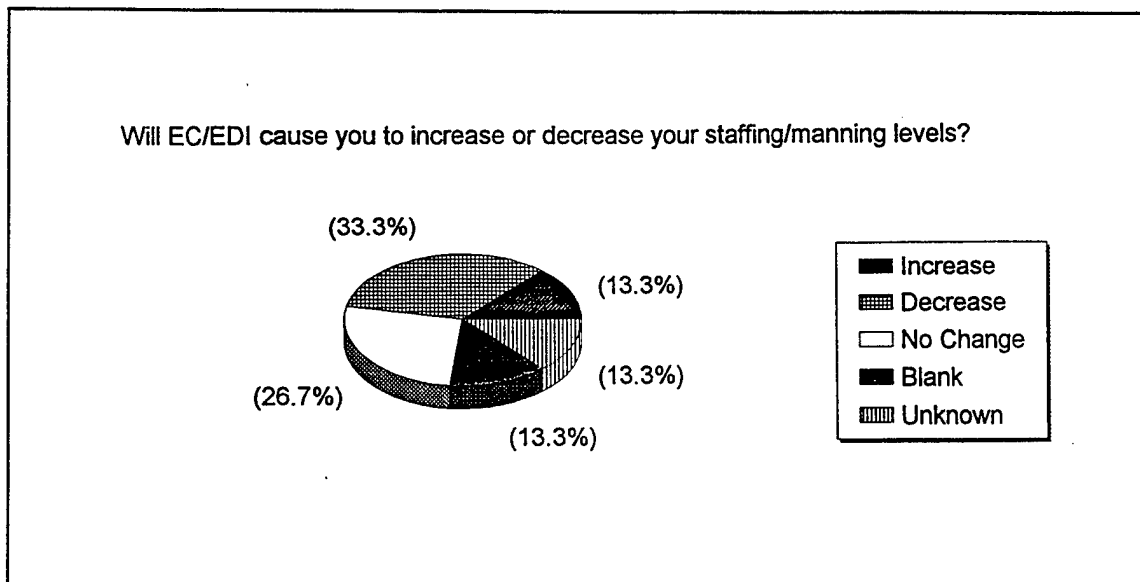


Chart 18

J. ESTABLISH A PILOT PROGRAM

The Marine Corps, according to DUSD's report, did not plan to run a pilot test for the implementation of EC/EDI. The following schedule in Table 1 was issued in DUSD's report indicating that the installation of EC/EDI capabilities would immediately jump to broad based implementation. An immediate conflict rises in the deployment of the system because of the rush to install the EC/EDI capabilities. The DASD report states:

The EC/EDI capability of MADES has not yet been completed on the WANG platform for the establishment of EC/EDI capability in MADES II/BCAS. An estimated 6 man-months must be invested in completing MADES II EC/EDI on the Wang platform. Testing the delivery of data to and from MADES II/BCAS will be via an Air Force Gateway to a DISA Distribution Point, and testing will begin in November 93. Availability of a Gateway/DP is required by second quarter FY94.

DOD EC/EDI Report in Contracting Report MADES II Deployment Schedule (p. 48)	
Site	Date
CampLejeune, NC	May 94
Parris Island, SC	May 94
Albany, GA	July 94
New Orleans, LA	July 94
Quantico, LA	July 94
Arlington, VA	July 94
29 Palms, CA	Nov 94
Barstow, CA	Nov 94
Camp Pendleton,CA	Nov 94

Table 1

In other words, MADES EC/EDI capabilities would not be ready or tested prior to the broad based hardware/software installation schedule above. Furthermore, the test site of the project would be conducted at an Air Force installation and not a Marine Corps installation. The schedule left little room should any problem arise in the MADES II/BCAS EC/EDI tests. Due to this method and DOD's rush to implement EC/EDI capabilities, no one should be surprised at the technical problems developed due to the differences or incompatibilities between the Air Force systems and the Marine Corps systems.

The schedule listed above was not implemented in the Marine Corps. Quantico was an initial site for the installation of EC/EDI capabilities despite its position in Table 1. Implementation stalled at Quantico due to TCP/IP problems associated with differences between the Air Force systems and Marine Corps systems.

MADES generated EC traffic was unable to reach designated FACNET gateways. Through intent or luck, as the table above indicates, Quantico became the pilot site once technical difficulties prohibited further installation. Because of this action, the Marine Corps complies with the EC/EDI model for a test site. Once problems were encountered, broad based installation of EC/EDI capabilities halted. Unfortunately the halting of the installation of EC/EDI capabilities and the reasons for delays were not passed on to the various Marine Corps offices or personnel. Personnel often voiced no knowledge of an installation schedule for EC/EDI MADES equipment. Once difficulties and suspension of the installation halted, offices were not kept abreast of the changes, status, or reasons for the installation delay. Field personnel generally knew there were problems with EC/EDI, but did not know specifics. "LBO knows," was one common recurring theme expressed by an individual, "but they're not telling us." (Author visited three separate offices to interview personnel about EC/EDI. Without exception, statements were only given on the basis that responses are to remain anonymous). Thus, the entire EC/EDI implementation and installation program is perceived in the field as "broken." [Ref. 31] Many individual opinion's hold LBO in low regard due to past unpleasant experiences with LBO, particularly over BCAS/MADES issues. In the eyes of field personnel, problems with EC/EDI only confirms LBO's incompetence and poor management skills.

K. REVIEW PILOT RESULTS AND MODIFY

One important aspect of the pilot program is the feedback, review, and modification of the pilot program. In industry, if problems arise out of a pilot program there are two options to choose; 1) apply the resources, expertise and people necessary to overcome the problem or 2) eliminate the program and avoid wasting time effort and resources. Priester learned this process in its first EC/EDI pilot. The Marine Corps chose to do neither. In this respect the pilot program is the

manifestation of lack of Marine Corps support, commitment and dedication to EC/EDI implementation.

There were three main parties in the pilot test; contracting/purchasing personnel, ITM personnel, and BCAS/MADES personnel. The three parties contradicted each other or indicated problems encountered were not in their area of responsibility. Rather than attempt to focus on who is correct or to blame for difficulties in the test pilot process, this research will point out significant issues within the overall management of the pilot test. The most significant issues in the Corps' test pilot were organizational. Mechanisms and methods of industry were not used or were not functional.

One of the most important issues of the pilot test is a group or steering committee focused solely on the pilot program. A single clear EC/EDI leader was not firmly established. A POC for the three main groups was identified, but locating a single person who admitted they were in charge of the entire test pilot process was not possible. No one appeared to take ownership of the process, but some were quick to voice blame. Marine Corps personnel also had other tasks in addition to test pilot issues. Many involved in the project were from Quantico and had Quantico operational issues competing for their attention. The test pilot, for the most part, involved parties from Quantico, and did not include others with expertise or interest in the pilot's success. Cross functional support and maximum participation are demanded from all major stakeholders within industry. The Marine Corps also did not draw on the best expertise available within the Marine Corps as industry does. This does not mean or imply Quantico personnel did not have the skills to accomplish the task at hand. Rather, it points out industry views its allocation and exploitation of resources and skills from the entire organization while Marine Corps efforts only considered those in the Quantico area. Once problems occurred, field offices were

not solicited for help. Budget and time constraints were not an issue as compared to industry. More than one year after attempting to initiate EC/EDI capabilities, personnel are still working BCAS/ MADES issues at Quantico. Contrary to industry, additional assets and expertise were not added to overwhelm and overcome difficulties encountered in the pilot. Additionally, there was no mention or discussion of options such as terminating the EC/EDI pilot, await the award of SPS, and accelerate fielding of SPS. Where industry has a tolerance point that once achieved will force them to stop the pilot test to avoid wasting time and resources, the Marine Corps has no point of termination. Specific objectives, goals, supplier participation, or go/no go criteria, common industry evaluations, were absent, not enforced, or not tracked. Reliance on resident experts is also limited in the BCAS/MADES program. Due to the age and technology associated with BCAS/MADES, only Air Force and Wang, personnel have resident expertise on the MADES/BCAS system. Most Marine Corps systems personnel would prefer to see BCAS/MADES system terminated since they have difficulties supporting its use. While industry attempts to migrate to a more modern platform, the Marine Corps is upgrading an outdated system. If industry cannot migrate from their legacy system, they attempt to insert new technology to interface with their legacy system. One example may use current client-server applications to provide the interface for EC/EDI capabilities. The Marine Corps is updating and adding on to outdated, Wang specific proprietary equipment. In hindsight, SACONS has proven itself superior to the BCAS/ MADES system. The Marine Corps, unfortunately, has BCAS/MADES and must struggle with the system until SPS appears.

L. BROAD BASED IMPLEMENTATION AND THE REMAINING EC/EDI MODEL

In all aspects compared to the commercial examples, the Marine Corps has essentially halted efforts in implementing EC/EDI even though verbally support continues to be strong. Because of EC/EDI inactivity, unresolved technical problems, lack of clear leadership and management of the EC/EDI implementation process, it is not necessary to cover the broad based implementation and the rest of the EC/EDI model. The Marine Corps has not progressed beyond the pilot test phase. Despite this, some of the mechanisms to make EC/EDI work in the remaining steps, are discussed.

Most successful EC/EDI examples consistently use committees, teams, individuals, or offices that only focus on managing the EC/EDI implementation process. An organization, such as 3M's EC/EDI procurement team is fully supported and firmly established by successful companies. Often these committees report directly to a president, vice president or senior management. Senior Management commits and dedicates resources to ensure the team has the tools and resources to successfully implement EC/EDI. Successful EC/EDI firms dedicated individuals full time to EC/EDI management both during as well as after EC/EDI implementation. EC/EDI requires continuous management and measurement in order to ensure EC/EDI remains in use. In this respect, the Marine Corps does not have the mechanisms that industry uses to promote, manage, shepherd, improve, and innovate in order to maximize the use of EC/EDI within the Corps.

In summary, successful EC/EDI has the following traits:

- An implementation plan
- Top management support

- Purchasing support
- Funding
- Dedicated manpower
- Supplier commitment
- Cross functional input and support
- Measurement of results [Ref. 1:p. 3]

Presently, the Marine Corps has very few, if any, of these successful indicators. The chart below graphically displays the results of current EC/EDI implementation efforts compared to the EC/EDI model. This does not necessarily mean the Marine Corps will fail in the implementation of EC/EDI. As Priester's example revealed, recognition of EC/EDI implementation problems, reevaluation and readjustment of Marine EC/EDI efforts can still turn EC/EDI implementation into a successful Marine Corps EC/EDI program. It is not too late for the Marine Corps to change. Chapter VI will focus on a strategy and plan to help EC/EDI implementation within the Marine Corps.

USMC EDI IMPLEMENTATION CHECKLIST

	Yes	No
Has management support been obtained?		✓
Has purchasing department support been obtained?		✓
Has commitment to EDI been obtained from cross functional organization personnel?		✓
Has an appropriate organization structure for the EDI effort been established?		✓
Has a pilot been established?	✓	
Has a method for reviewing the results, as well as modifying results, of the pilot program been developed?		✓
Have policies and procedures for both purchases and suppliers been finalized?		✓
Has road-based implementation been established?		✓
Have plans been developed to review and measure benefits and costs?		✓
Has a system for continual monitoring and improvement of EDI been developed?		✓

VI. RECOMMENDATIONS FOR USMC STRATEGIC EC/EDI CAMPAIGN PLAN

A. INTRODUCTION

The intent of this chapter is to develop both a strategy and plan in order to implement initial electronic capabilities in both USMC purchasing offices as well as their vendor base. The goal is to migrate both parties towards increasing levels of EC/EDI activity, striving for an integrated EC/EDI paradigm. Industry examples indicate not every firm can or will integrate EDI within their company's systems. Successful EDI firms do, however, continue to foster and encourage an integrated solution for their vendors. Before the specifics of a plan can be discussed, there are limitations which the Marine Corps must operate within. These items are the intent of EC/EDI initiatives, time and scope of the implementation, existing structure and EC/EDI framework, and the support of the Marine Corps vendor/supplier base. Although some of the items listed may limit the ability to implement EC/EDI, there is substantial room to maneuver within this box given today's wide technology choices. The first topic to be covered will discuss the intent of the EC/EDI initiatives.

B. INTENT OF EC/EDI INITIATIVES

President Clinton's Presidential Memorandum dated 26 October 1993, "Streamlining Procurement Through Electronic Commerce," states several desired EC/EDI objectives:

- (a) Exchange procurement information such as solicitations, offers, contracts, purchase orders, invoices, payments, and other contractual documents electronically between the private sector and the Federal Government to the maximum extent practical;

- (b) Provide businesses, including small, small disadvantaged, and women-owned businesses, with greater access to Federal procurement opportunities.
- (c) Ensure that potential suppliers are provided simplified access to the Federal Government's electronic commerce system;
- (d) Employ nationally and internationally recognized data formats that serve to broaden and ease the electronic interchange of data; and
- (e) Use agency and industry standards and networks to enable the Government and potential suppliers to exchange information and access Federal procurement data.

The FAR response and intent of EC initiatives are found in FAR Section 4, Subpart 4.5 pertaining to this discussion are:

"Electronic commerce (EC)" means a paperless process including electronic mail, electronic bulletin boards, electronic funds transfer, electronic data interchange, and similar techniques for accomplishing business transactions. The use of terms commonly associated with paper transactions (e.g., "copy," "document," "page," "printed," "sealed envelope" and "stamped") shall not be interpreted to restrict the use of electronic commerce.

"Electronic data interchange (EDI)" means a technique for electronically transferring and storing formatted information between computers utilizing established and published formats and codes, as authorized by the applicable Federal Information Processing Standards.

"Federal Acquisition Computer Network (FACNET)" means the Government wide Electronic Commerce/Electronic Data Interchange (EC/EDI) systems architecture for the acquisition of supplies and services that provides for electronic data interchange of acquisition information between the Government and the private sector, employs nationally and internationally recognized data formats, and provides universal user access.

- (a) FACNET functions are listed as follows:
- (1) Provide widespread public notice of contracting opportunities, and issue solicitations;
 - (2) Receive responses to solicitations and associated requests for information;
 - (3) Provide widespread public notice of contract awards and issuance of orders (including price);
 - (4) Receive questions regarding solicitations, if practicable;
 - (5) Issue contracts and orders, if practicable;
 - (6) Initiate payments to contractors, if practicable; and
 - (7) Archive data relating to each procurement action.
- (b) FACNET will permit the private sector to do the following electronically:
- (1) Access notices of solicitations;
 - (2) Access and review solicitations;
 - (3) Respond to solicitations;
 - (4) Receive contracts and orders, if practicable;
 - (5) Access information on contract awards and issuance of orders; and
 - (6) Receive payment by purchase card, electronic funds transfer, or other automated means, if practicable.

EC/EDI is mandated by the President and codified in the FAR as the **preferred** method of soliciting and receiving quotes for purchases between \$2,500 and

\$100,000, but certainly not the only method. A recent GAO ruling allowed non-FACNET electronic bulletin board solicitations by DISC because they provided competition to the maximum extent practical as required for small purchase acquisitions and were consistent with FACNET requirements. [Ref. 63] This aspect is particularly important since the Marine Corps has difficulties in its EC/EDI implementation. A temporary electronic alternative is necessary until sites are FACNET capable or SPS is fielded. This plan is not designed to bypass the present FACNET structure or requirement, but as an alternative and complimentary method to jump start the electronic process in order to abide with the intent of the 1997 EC/EDI mandate.

Equally important is the support of the past and present Commandant of Marine Corps, General Mundy and General Krulak. EC/EDI concepts are supported in three Marine Corps Commandant Policy White Letters, White Letter No. 8-92, White Letter of No. 9-93, White Letter No. 14-94 and the present Commandant's Warfighting Laboratory precepts.

White Letter 8-92 states the Marine Corps should make "payments of reasonable prices" for necessary goods and services. Furthermore the Marine Corps should "buy only what we need and ensure the price we pay is fair and reasonable." As the IBM survey indicates in Chapter IV, a 26% average savings is possible with electronic on-line processes that EC/EDI promotes. Electronic methods make any firm a local vendor for the Marine Corps. Electronic methods increase competition and lower prices as the IBM survey indicates. 3M, RJR, Priester, and others, also obtain better service in addition to better prices in their electronic process. Savings in electronic transaction and processing costs are passed on to the customer. Therefore to save scarce Marine Corps resources and obtain a true "fair and reasonable" price for goods and services as well as better service, Marine Corps

purchases must be done electronically. Current prices received for goods and services are higher than the prices received through electronic processes, and does not comply with the Commandant's policy. [Ref. 50]

White Letter 9-93 states "reinventing Government initiatives," which EC/ EDI is part of, "are critical to improving the current state of the Government. The Marine Corps can benefit from these initiatives." This White Letter specifically targets the leadership within the Marine Corps. The Commandant points out that each and every officer within the Marine Corps has a responsibility, duty, and obligation to carry out and support reinventing initiatives, such as EC/EDI:

The entire senior leadership of the Marine Corps is responsible for setting the tempo at which our officers, enlisted, and civilians follow. Change is necessary if we expect our "Quality Corps" of 218 years to move into the 21st century as the force of choice.... "Ready, Relevant, and Capable."

This is our opportunity to set the pace again by proving we have a Marine Corps that is both effective and efficient at mission accomplishment. I am secure in the knowledge that your full support will maintain the momentum of this vitally important initiative.

White Letter, 14-94, addresses the Marine Corps continuing problem of invalid unliquidated obligations. One of the positive inherent traits of EC/EDI is that it will help reduce the problem of invalid unliquidated obligation because of increased accuracy of EC/EDI transmitted information. DFAS's long term strategy to reduce and eliminate invalid unliquidated obligations and become more efficient and responsive depends upon the use of EDI and Financial EDI (FEDI). The Commandant further states:

As commanders we are fiscally accountable and responsible to correct this problem.... **We must assign adequate personnel to do the job, give them proper training, be certain we have effective internal**

controls, and provide appropriate command emphasis and support.

The magnitude of invalid obligations reported by the auditors indicates clearly to me that our resources have not been used effectively. I strongly urge you to take an active role in guarding against the inefficient use of our scarce resources. We must insure that every dollar is spent prudently and accounted for properly. (Authors emphasis)

Finally, the current Commandant's guidance concerning the Warfighting Laboratory (CWL) is pertinent to the intent and inherent traits of EC/EDI. General Krulak states, "a major goal of the CWL is the leveraging and adaptation of ongoing R&D and technology opportunities within the R&D community, especially those that can be of immediate potential exploitation and operational experimentation. Technology and R&D sources include DOD, ARPA, Government laboratories, academia, industry, and non-DOD sources." [Ref. 64] The importance and specific use of ARPA referenced by the Commandant cannot be overstated in this plan. EC/EDI is inherently a technology exploration and exploitation plan that the Commandant advocates. Furthermore, EC/EDI capabilities have the potential to be applied in a sea-based support and logistics environment that the CWL desires. "The objective is to minimize needed equipment ashore and provide on-demand logistics support from the sea. The entire logistical chain essentially from supply to distribution will be highly responsive to the needs of the forces ashore. By reducing the traditional buildup ashore, equipment and forces will be more survivable, tailored to the specific need and cost-effective. Key technologies include: automated tracking/supply/routing of logistics (total asset management), advanced transport and container techniques, low consumption/long endurance equipment and resources, and alternative fuels/propulsion/personnel supplies." Note the EC/EDI characteristics of the plan: on demand logistics, supply to distribution, highly responsive, tailored to the specific need, cost-effective, total asset management. EC/EDI industry examples

often refer to these qualities as Just In Time (JIT) management principles. EC/EDI enables JIT through EC/EDI applications by providing faster and more accurate information, integrating "total asset management" EC/EDI processes by linking users, purchasers, payments, suppliers and shippers. In summary, the intent of the EC/EDI Presidential Mandate, as well as the intent of past and present Commandant is clear; EC/EDI implementation is required and expected to be carried out. The Marine Corps can no longer ignore EC/EDI.

C. TIME AND SCOPE

Although RJR is a large company, it does not compare in size to DOD in terms of transactions. DOD executes between one and two billion procurement transactions annually with thousands of vendors. DOD's plan states its desire to convert 350,000 vendors into electronic trading partners and make millions of small purchases a year all within a 3 year time frame. This is an aggressive and daunting task given only 40,000 U.S. firms use EDI methods. [Ref. 25:p. iv] RJR's EC/EDI implementation outlook may shed some light on this subject.

RJR has 1,800 electronic trading partners and executes 6,000 purchasing transactions annually. RJR required six years of dedication, support, and commitment to transition to an all electronic integrated process. Furthermore, RJR paid for all EDI transition costs in order to make EDI occur with the last 5% of their suppliers. RJR invested \$40,000 of their own money in order to transition all of their suppliers into electronic trading partners. [Ref. 4:pp. 110-111] In light of this, the President's Mandate to switch the entire Government to EC/EDI methods in approximately 3 years appears unrealistic. Additionally, no one in DOD has voiced their desire to pay for suppliers' EC/EDI conversion costs as RJR. Using RJR's method and DOD's 350,000 trading partner goal, the last 5% of the electronic vendor base will cost DOD \$777,777 in 1993 dollars. Adjusted for inflation, this figure approaches \$1 million

dollars. Is DOD committed to spend \$1 million or more above the \$26 million already expended on EC/EDI implementation? Given the trend of declining defense budgets, this is highly unlikely as is the notion that the Marine Corps will pay for EC/EDI conversion costs. Given firms such as 3M and RJR are private companies, they do not have the bureaucratic hurdles and resistance to change that DOD and Government agencies face transforming to EC/EDI. As mentioned, such firms also pay for EC/EDI conversion costs. Therefore, a period greater than six years may be more appropriate for DOD's and the Marine Corps' conversion to EC/EDI.

A long range Marine Corps outlook is necessary as is the dedication of assets and daily management of EC/EDI implementation. Daily EC/EDI management is necessary until SPS is fully fielded and operational in all Marine Corps purchasing offices. SPS scheduled fielding falls in line with the six year outlook as full fielding is not anticipated till the 2002-2007 time frame. Given the problems and poor view of BCAS/MADES, the Marine Corps may consider initiating permission to accelerate SPS fielding immediately upon selection of the SPS product. With only 28 sites to field SPS, the small number of offices shouldn't significantly impact any present fielding plans. The time and scope of the project must be adjusted to fit the realities of the scope necessary in implementing the Corps' EC/EDI capabilities. As the time and scope adjusts, so must the strategy and plan adjust within the existing EC/EDI structure and framework.

D. STRUCTURE AND FRAMEWORK: FAR, FACNET, AND SPS

According to the FAR, FACNET purchases are geared toward a specific market; purchases above the \$2,500 micro-purchase threshold and below the simplified acquisition threshold of \$100,000. This does not mean purchases cannot be made through FACNET in purchases less than \$2,500 or more than \$100,000. Rather, it creates a preference toward the Government credit card for purchases less

than \$2,500. Thus, EC/EDI works hand-in-hand with the Government credit card. For purposes of this study, credit card purchases are viewed as an electronic method; authorizations and purchase payments occur electronically. Therefore, to abide with the intent of EC/EDI initiatives and the FAR, this plan suggests that all purchases in the Marine Corps under \$100,000 only be conducted through the use of a credit card, FACNET, or FACNET similar techniques. Again FACNET similar techniques are only temporary options to bridge the gap of current Marine Corps EC/EDI implementation failure and the requirement to abide with the Presidential Mandate. Furthermore a requirement exists to work within the current FACNET structure despite problems associated with FACNET. This does not mean that FACNET is the only method to use, but rather the preferred method and ultimate long range Marine Corps EC/EDI objective.

Lastly any suggestions must consider SPS. SPS will replace the BCAS/MADES automated procurement system. This will provide an open windows based solution with EC/EDI features integral to the system. SPS provides a quantum leap in technology and usability for Marine Corps purchasing personnel. Lastly, DFAS must be considered since they will be required by law to make all Federal payments, except IRS tax returns, electronic payments by January, 1999. DFAS's long term strategy for future payments as well as to reduce invalid unliquidated obligations is based upon Financial EDI (FEDI). Hence, the immediate ability to transmit EDI transaction and integrate the procurement-payment cycle is real within the Marine Corps.

E. SUPPORT OF MARINE CORPS PURCHASING PERSONNEL AND VENDORS

A significant hurdle present in the current EC/EDI implementation process is the support of both purchasing personnel and vendors. A key aspect of support hinges

on educating both the Government as well as vendors on the concepts and benefits of EC/EDI. Attention must be focused to develop an understanding of EC/EDI. EC/EDI simply makes good business sense, and will be an expected business process in future business relationships. The plan for EC/EDI must help migrate firms at the lowest spectrum of electronic capability, to the highest advanced integrated EC/EDI approach without placing a burden upon vendors or purchasing personnel. The program must provide vendors an "opt out" solution as the levels of sophistication increase from fax, e-mail, to EDI. In other words the plan must be flexible enough to accommodate a wide range of options as commercial industry provides its vendors.

F. STRATEGY

Conceptually, EDI is nothing more than managing information, transforming the information into knowledge, and using the knowledge to accomplish a service or mission objective within an electronic paradigm. Electronic methods capture added value of workers wherever they may be in the customer/supplier relationship. Thus re-keying or duplicated efforts are eliminated. The speed, efficiency, and accuracy of electronic knowledge and processes provides intrinsic value to both the customer as well as the supplier. Thus, in many respects, EDI, is viewed as a "competitive advantage" vehicle. The desire to gain a competitive or strategic advantage through price, quality, or service, real or imagined, is a major driving force for the enduring and continued growth of EDI.

The Marine Corps' interest in EC/EDI focuses on reducing costs, as industry is, but also in developing new suppliers as well as helping current suppliers remain competitive and robust suppliers of the future. Firms can gain a competitive advantage, today, compared to their Government competitors, by implementing EC/EDI prior to DFAS's electronic payment requirements and fielding of SPS. Learning and experimenting with EC/EDI today, means they gain a competitive

cost/service advantage, which can be immediately exploited, as well as future advantages as their remaining competitors maddeningly dash to obtain EC/EDI capabilities to comply with DFAS and SPS deadlines. As businesses and Government expand EC/EDI/FEDI, the EC/EDI mandate will be a common business and Government mandate for all purchase/payment processes.

Based upon the intent of EC/EDI, the following is the strategy for the implementation of EC/EDI within the Marine Corp; eliminate the paper purchasing/payment cycle and all paper communication between industry and USMC activities by transforming it into a 100% electronic process. This will be accomplished using the Government Credit Card, EDI/FACNET structure, and where appropriate other EC technology such as e-mail and internet World Wide WEB (WWW) technology. The plan and goals to accomplish EC/EDI implementation will also focus on the following:

- Make the entire process, from purchase to payments, electronic using EC methods such as such as e-mail, internet, as well as EDI;
- Facilitate and conduct 100% of all Marine Corps obligations and payments through EDI/FEDI processes;
- Establish an EC/EDI Office and EC/EDI Support Team to: manage implementation of EC/EDI on a daily basis, provide EC/EDI support for Marine Corps personnel and their vendor's, track measure and report EC/EDI implementation progress to the Commandant through Deputy Chief of Staff, I&L;
- Establish measurement metrics and evaluate all leaders/managers, such as the LBO Director and contracting officers, on their improvement of EC/EDI implementation in their fitness reports and civilian evaluations;
- Re-engineer the paper process at the local level in order to eliminate non-critical tasks that do not add value;

- Capture data at the source and find methods for users to begin the electronic process;
- Develop, gather and deliver training and education material for procurement personnel and their vendors;
- Train and educate Marine Corps personnel on EC/EDI implementation and the benefits to EC/EDI;
- Keep people informed of EC/EDI implementation progress and accomplishments;
- Empower and encourage employees to contribute and suggest changes to the EC/EDI process and provide incentives and bonuses to individuals and offices that make such suggestions;
- Eliminate LBO control and management of ADP and automated procurement systems and empower local levels to manage their processes;
- Focus on industry's purchase order success instead of RFQ DOD focus; use internet for RFQs;
- Request a waiver or obtain re-invention lab status in order to waive the Government's 30 day Prompt Payment Act requirement. USMC's suppliers will receive immediate electronic payment upon receipt of correct EDI/FEDI transactions.

The plan to address the strategy is initially a low tech e-mail plan based over a six year basis or until SPS is fielded. There will be hurdles at three distinct phases that raise the use and sophistication of EC/EDI usage. Ultimately once SPS is fielded, the vendor base will be electronic. No business will transpire with firms who do not accept the Government credit card or do not use EC/EDI methods. Until this high level of sophistication occurs, e-mail will help bridge the technical gap and hook users on to the concept and use of computers in a purchasing environment.

G. EC/EDI IMPLEMENTATION PLAN

1. E-mail Phase

The initial phase of the plan is the e-mail phase. E-mail is a low tech and easy method to begin transmitting communications to and from Marine Corps contracting offices and vendors. This phase will be a 12 month hurdle for vendors to overcome. If vendors do not become e-mail capable, they will be dropped from the vendor list. E-mail is a simple tool that even Marine Corps personnel religiously use on a daily basis. E-mail is also prevalent in the business community. Business cards routinely include e-mail addresses. Thus, e-mail is an easy acceptable low tech solution to develop purchasing support and vendor support. Those who do not wish to make the e-mail jump will be referred to the FAST Electronic Brokerage system. FAST will be discussed in detail later in this chapter. E-mail is also cheap- \$10 a month buys an e-mail account at the various on-line services such as America Online (AOL). The USMC-wide e-mail system is expected to have internet connectivity and will be able to communicate with any commercial e-mail address. If offices do not have that connectivity, they will be allowed to obtain a commercial account just as their vendors. Internet service providers charge between \$10-\$20 a month for unlimited internet access which includes an e-mail account. The precedent for e-mail connectivity and usage is well established in the business world as a common business practice. The Marine Corps, however, is not using this commercial example in its relationship and communication with its vendor base. This is not only unwise, but inefficient. One e-mail message can be sent to the entire vendor base with one click of the mouse instead of:

- Printing a letter to each vendor;
- Folding each letter;

- Enclosing each letter in an envelope;
- Sealing each envelope;
- Addressing each envelope;
- Mailing the letters.

This also frees up individuals to conduct more important tasks within the offices. Additionally, the speed at which e-mail travels is extremely quicker than the current postal system. Firms could begin or bid on items the same day the office distributed the solicitation. E-mail activity is also easy to record; copy and paste e-mail activity into an electronic file/folder. Another aspect to e-mail is cost.

As indicated above, e-mail is a cheap alternative. Many Government contractors subscribe to the CBD, commercial FAR resellers such as CCH, as well as updates to the Federal Register. These are costly options. An e-mail account with internet access will provide the opportunity to get these materials free on-line. In this manner the account could also save vendors money by reducing current cost and increasing the ability to access other information electronically. Electronic submissions of bids and electronic bulletin boards also were upheld in a recent GAO protest. Although security issues were not part of the issues at DISC, security issues are not an issue due to public shareware, Pretty Good Privacy (PGP).

The issue of security is a moot point for several reasons. First and foremost there is a shareware program written by Phillip Zimmerman of MIT that is a public key encryption system. This program is widely available on the internet and is free to individuals. A reasonably priced commercial version is also available for vendors through Viacrypt. PGP works on windows, UNIX, MacIntosh, and OS/2 operating systems. Essentially, PGP provides a sealed envelop for electronic mail. If tampering occurs in the deliver of the e-mail message, the receiver will be aware of such

problems. Because this product encrypts so well, the U.S. Government has banned distribution of PGP to foreign countries in fear of misuse by criminal elements. Not only does PGP support encryption, but it also supports electronic signatures. Electronic signatures, are even more difficult to forge than written signatures. In this manner the vendor will absolutely know the message was not tampered with and also have positive confirmation that the message is from a contracting officer.

In France an enterprising person decrypted one encrypted message that used an algorithm 40 bit key. This encrypted message required 8 days of work, 120 workstations, and two parallel super computers to break the code. This was a single encrypted message. To repeat that task, even from the same client to the same server seconds later would require another 8 days , 129 workstations, and 2 parallel super computers. PGP can use a 128 bit key which is 2^{88} times harder to decrypt than the 40 bit key. The computing power to decrypt such a message would be more than 1 trillion times greater than the capability to decrypt the 40 bit key. [Ref. 65] With PGP, the ability to electronically sign, safely encrypt and transmit e-mail is available today as a cheap and easy alternative to security issues. Furthermore, the speed at which Marine Corps can award a contract using electronic means now becomes a security tool also. The contract can already be awarded before anyone ever successfully decrypts a message, if it can be decrypted at all. Thus any information gathered from such a costly and highly technical endeavor is useless. In this manner, the speed of award, and the high technical and cost barriers required to decrypt the message eliminates any security related issues with little cost to Marine Corps activities and vendors. PGP is also easy to install and presently has five windows applications that facilitate use of PGP in a windows friendly environment. PGP is a simple, low cost solution to any security concerns. [Ref. 66]

Another option using public key encryption technology for electronic authentication is the U.S. Postal Electronic Commerce Services. By July 1996, the U.S. Postal Service (USPS) will "begin operating a 'postmarking server' that will time stamp electronic documents with the USPS digital seal. Each USPS electronic postmark will cost ten cents and online billing will be available. This postmark will show the document existed at a certain point in time and has not been modified." [Ref. 67:p. 1] This is particularly welcome to the contracting community because the electronic transmission is covered under the USPS fraud statute. Postal inspectors will investigate if USPS electronic methods are used to perpetuate fraud. Thus, any legal or security concerns are eliminated for only ten cents per transmission. [Ref. 67:p. 1]

DISC faced a GAO protest when an RFQ, solicited on an EBB, required an electronic response. The protester argued that the electronic process limited competition. DISC won the protest because the electronic medium 1) improved efficiency on PALT, 2) increased competition, and 3) electronic responses did not overly burden the vendor community. DISC's electronic methods, including electronic submission of bids, were consistent with the mandate to provide competition to the maximum extent practical for small purchase acquisitions. GAO also ruled that "while DISC procurement were not conducted through FACNET, they were consistent with FACNET requirements." [Ref. 63] E-mail is not only a simple way to communicate with vendors, it also is now a recognized method to submit bids. E-mail is now the norm and should also be a norm within the Marine Corps and its vendor base.

This plan suggests all future solicitations, blanket purchase agreements, etc., contain e-mail addresses as a requirement for bidders. To encourage e-mail use, communication with vendors will be through e-mail unless time sensitive responses

demand otherwise. E-mail and voice mail will greatly reduce the day-to day interruptions of the purchasing workforce. The FAR also supports this position as e-mail is specifically listed as an EC process. Thus, e-mail supports the intent, upholds the regulations, and is a cheap alternative to begin EC/EDI implementation. E-mail also saves businesses shipping costs which can be up to \$15 for overnight delivery. Bill Eagler, vice president of Online Systems Services, estimates businesses can save \$1,200 per employee using e-mail for project files distributed as e-mail attachments. [Ref. 68:p. 23] Additionally e-mail technology is quickly approaching the EDI world. There are current EDI options based upon e-mail activity that could be used by the vendor community. EDI transactions are being "wrapped" in an e-mail message standard as an option for trading partners. The e-mail option also still allows firms to continue up the ladder of EDI complexity by integrating new e-mail messaging technology with EDI capabilities. In this fashion e-mail very effectively leverages a \$10 per month cost and keeps open a wide option for vendors to choose their respective levels of EC/EDI activity. This flexibility should not only make vendors happy, but purchasing personnel also. Vendors have a foot in the door for EC activity while becoming accustomed to electronic commerce and electronic business transactions. E-mail also provides a wide selection of future EC/EDI opportunities. Those that do not wish to overcome the e-mail step will be referred to FAST. Once the 12 month e-mail phase ends, the FAST phase will begin.

2. FAST Phase: A Government Agency Project

The FAST phase is named after a Government sponsored project titled FAST Electronic Broker. FAST is a temporary tool to overcome the difficulties the Marine Corps presently faces with BCAS/MADES EC/EDI capabilities as well as to migrate and convince the vendor base to switch to an electronic process. FAST is not intended to replace or bypass FACNET or EDI methods, but merely is a method to

help jump-start the EC/EDI implementation process. FAST is a project initiated by the Advanced Research Projects Agency (ARPA) in cooperation with the Information Sciences Institute of the University of Southern California. FAST is a rapid and reliable purchasing tool based upon electronic mail, EDI, FAX, phone and computers. FAST has a wide base of suppliers, distributors and manufacturers to tap into, including Government databases, for a robust purchasing mechanism. FAST's strength is in the small purchase arena as well as unique item purchases. Essentially, the Marine Corps can use FAST to purchase items via e-mail, giving the Marine Corps EC capabilities despite the BCAS/MADES problems, in order to fulfill the President's EC/EDI Mandate with no additional equipment costs incurred by the Marine Corps. Government sponsorship is vital since the backing of the Government is an essential element of this phase. Notice FAST is an ARPA project which is also in line with the Commandant's CWL concepts and support.

In using FAST, the Marine Corps would not be implementing or instigating any new project, initiative, or unusual procurement methods. The Corps would be using a Government sponsored and authorized project. The Government sponsorship also allows FAST to receive Government prices for goods and services. Appendix F also highlights FAST's praise and support from the Joint Chiefs for its vital role in fielding an anti-fratricide device during the Gulf War. OFPP conducted a post review of the Gulf War procurement and found it to be fully compliant with applicable law and regulations. Additional legal and regulatory issue addressed by Richard Dunn, ARPA's General Counsel, also promotes Marine Corps use of FAST because FAST:

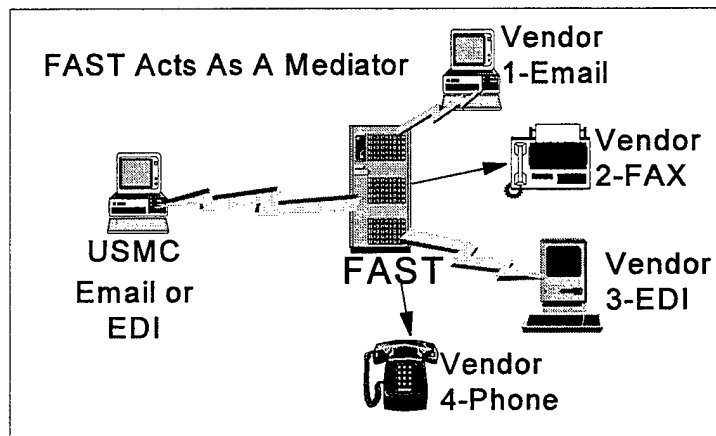
1. Does not conflict with any inherent Government functions
2. Does not conflict with any Walsh-Healy Public Contract's Act
3. Does not conflict with the Competition in Contracting Act

4. Does not conflict with the Small Business Act
5. Does not conflict with Small Business Set Asides (SBSA) (See Appendix F)

Because FAST does not conflict with the above items, and even helps contracting offices manage the various aspects of the above regulations, such as SBSA, Dunn states any concerns or objections concerning FAST'S electronic system, as indicated above, "are not valid as a matter of fact and law." (See Appendix F) Therefore the Marine Corps should use FAST because it is; sponsored by a Government agency, in line with the Commandant's CWL intent, approved by the Joint Chiefs, reviewed and approved by OFPP and does not conflict with any existing laws or procurement regulations. DLA, U.S. Army, and the Air Force all currently take advantage of FAST's unique capabilities. This plan requires Marine Corps use of FAST because it makes good business sense, fulfills the intent of the EC/EDI Mandate, and supports the Commandant's CWL technology exploitation initiatives.

a. Fast-Good for Government and Vendors

The essential step in the FAST phase is migrating the vendor base to participate in FAST. The important capability of FAST is the flexibility in its communication capabilities. Because BCAS/MADES EC/EDI capabilities are stalled, the Marine Corps can communicate with FAST via e-mail, today, if it desires to do so. Once BCAS/MADES EC/EDI capabilities are installed or if SPS is fielded, FAST can also accept EDI transactions. Thus, if the Marine Corps moves from e-mail traffic to EDI traffic, the transition will be transparent to the vendor base. Vendors will not notice any changes in their traffic or business process. Thus, an EDI transaction can be sent through FACNET and without any further work, other than changing the e-mail address, be forwarded to FAST.



The other strength of FAST is its ability to communicate to the Marine Corps vendor base in whatever fashion they use: phone, FAX, e-mail, or EDI. Essentially FAST contacts the entire vendor base in addition to any other FAST participant that can respond to the solicitation. The FAST/FACNET team enhances competition, promoting CICA, as well as supporting the contracting officer's requirement in FAR 13.106 (a)(3) to solicit new sources. FAST not only has thousands of sources, but also continually seeks new vendors to add to its database. In this fashion, a Government sponsored project is fulfilling the FAR regulation to solicit new sources without effort expended by the contracting office. FAST does not create any barriers because it is FREE to become a FAST participant. As the picture above indicates, if vendors choose to opt out of the transition towards electronic commerce they could still join FAST and use their FAX to conduct business electronically with the Marine Corps. This aspect would be transparent to the contracting offices. FAST's response would remain e-mail or EDI. In effect, vendors get a taste of electronic commerce at little or no cost. By joining FAST, each firm now has gained the ability to access and conduct business with thousands of other firms within FAST. Local vendors would no longer be local, but national vendors for

their \$120 per year e-mail account. Through FAST, the Government and the Marine Corps is inviting the vendor base to test electronic commerce methods without incurring any substantial cost risk. The Marine Corps wins in that they are moving the vendor base towards an EC process, step by step, with little or no cost to the vendor base. Because FAST is free, FAST certainly will generate vendor support and participation. Secondly, the Marine Corps can use e-mail to initiate FAST which would be welcomed and supported by purchasing personnel. They do not have to relearn any complicated process or wait for the BCAS/MADES installation to occur. Even if the BCAS/MADES installation overcomes its problems, FAST will still accept EDI transactions. Therefore, a FACNET/FAST RFQ could occur without additional work or re-keying effort necessary. Furthermore, the FAST/FACNET option will provide greater competition resulting in a lower price for Marine Corps activities. The FAST option does not commit offices to exercise a FAST quote if it is not competitive.

The FAST strategy has several win-win aspects. First vendors get a taste of EC/EDI at little or no cost. Secondly vendors increase opportunities to expand their sales on a national level, again in a very cost effective manner. Thirdly, local vendors solely dependent on local Government business may expand their business base and be less dependent upon Government contracts. Finally, and most importantly, e-mail and FAST "hooks" the vendor base into an electronic process and may encourage them to expand upward in the EDI process because it is a good business decision to do so.

One of the most beneficial aspects of e-mail and FAST is that the process and experience may lead to a more sophisticated electronic process such as EDI. A recent Rand study on the electronic environment states the e-mail is a catalyst for further electronic activities and participation. "Electronic mail is the critical first

entry point to participation in electronic communities for the majority of individuals. Also, because e-mail is immediately popular with network users, it plays a crucial role in stimulating them to experiment with other features of an electronic environment. The value of e-mail's role as a catalyst to other, more advanced network use is significant. Return on investments made by commercial businesses and other enterprises in network services also are likely to rely on use of more advanced, value-added features." [Ref. 69] Nordstrom, the retailer, also confirms e-mail is the lowest common denominator of technical choices. Nearly everyone can use e-mail. Nordstrom's business process, many unique one-time buys and no centralized buying offices, lead Nordstrom to use e-mail instead of EDI. In Nordstrom's case, Randy Rehn, project manager for Nordstrom, states, "our goal is to study and implement EDI where it makes sense for us, but it won't always make sense." [Ref. 70:p. 72] Unfortunately for the Marine Corps, one aspect of DOD's EC/EDI operational concepts, RFQs, does not make sense.

b. Follow Commercial Examples: Use Purchase Orders

As indicated in Chapter IV, industry gravitates to the purchase order transactions and then generally moves into EDI invoicing, payments, and shipping. Contrary to industry, DOD has chosen to initiate the 840 RFQ transaction first. Industry's rationale for this is simple; the purchase order tends to draw other areas and functions into the electronic paradigm. [Ref. 71:p. 78] Other areas race to keep up to speed as the process moves toward an electronic integrated paradigm. Turner thoroughly documents the six most commonly used EDI transaction sets, which are:

- 810 - invoice
- 820 - Payment Order/Remittance Advice
- 850 - Purchase Order

- 855 - Purchase Order Acknowledgment
- 997 - Functional Acknowledgment

Notice the 840 RFQ transaction is absent. In addition to DOD's interpretation of a single architectural solution to EC/EDI, they also have chosen one of the most difficult hurdles and expensive transaction sets to implement EC/EDI: 840 RFQ transaction. [Ref. 71:p. 78] In Turner's study, only 7 of 95 firms sent 840 transactions, and only 9 of 95 received 840 transactions. As DOD continues to have problems in its FACNET and EC/EDI implementation, DOD's process must be re-evaluated. Marine Corps EC/EDI activity should focus and prioritize its implementation efforts on the six common commercial transaction sets listed above. Once EDI activity and participation matures, the Marine Corps could move toward RFQ transaction sets. RFQs in commercial example are typically only used in mature EC/EDI environments. DOD and the Marine Corps are not in a mature EC/EDI environment. Therefore, focus on the 850 Purchase Order is a better alternative for current EC/EDI activity. 840 transactions often are very large. This translates to higher vendor cost as many VANs charge customers a fee per character. Cost must be considered through the Corps' eyes as well as the vendor's eyes. Costs, or the perception of high costs is limiting EC/EDI activity and participation. Although FAST will be used, FAST does not prohibit sending RFQs through FACNET. As mentioned before, the tandem use of FAST/FACNET is desired and reinforces FACNET use. However an alternate method to access RFQs besides FACNET is necessary. To help shoulder some of the burden, the plan uses FAST, as mentioned before, as well as internet World Wide Web (WWW) pages.

c. Internet Web Pages: Inexpensive Universal Access

DOD has institutionalized a single architectural EC solution. This may not be in the best interest of vendors, or the Government. Such a design may,

unintentionally, violate the objectives and intent of EC/EDI initiatives. There is not only an effective, cheap, and simple manner to fully live up the EC/EDI objectives and regulatory intent, particularly FACNET requirements, but also to share the burden, expense and ease of EC/EDI transition, including small businesses. This alternative is internet web pages. No other means presently fulfills the expansive overarching intent of EC as well as internet web pages. Web pages address all of the president EC objectives, abide by the definitions of EC, and address 10 of 13 functions associated with FACNET.

In both the Presidential Mandate and the FAR an underlying and common intent is to distribute Government information, such as contracting information, as broadly as possible. There is no indication, whatsoever, to limit the distribution of information only to private companies such as the current DOD EC/EDI distribution to certified VAN/VAS organizations. As much as the Government desires to uphold the sanctity of full and open competition in procurements, there should be a parallel full and open access to information. Such a conduit to information not only promotes full and open competition but also abides by the full intent and objectives of EC/EDI. Presently there is an architectural limitation of information, which creates an information barrier to entry, limiting competition.

Present FACNET initiatives do not promote the FAR's FACNET objectives concerning widespread public notices of contracting opportunities to Government solicitations, questions regarding solicitations, or access to archived data relating to each procurement action. Present FACNET operations neither promote widespread public electronic access to notices or reviews of Government solicitations, nor does FACNET allow access to contract awards and issuance of orders. Such access is presently only given to the VAN/VAS organizations, not the public. Public

access, by definition, does not equate to the private commercial VAN/VAS distribution structure DOD presently uses. Private firms pay the VAN/VAS for Government contracting information. Allowing only designated firms access to such information and forcing businesses to pay for free Government information is contrary to the widespread public notice concept as well as contrary to recent legislation on Government information. House Resolution 830 Requires each Federal agency to ensure that the public has timely, equal, and equitable access to information products and services. The resolution also prohibits agencies, except where specifically authorized by statute, from:

- (1) Establishing exclusive, restricted, or other distribution arrangements that interfere with timely and equitable public availability;
- (2) Restricting or regulating the use, resale, or re-dissemination of public information by the public;
- (3) Charging fees or royalties for resale or re-dissemination of public information; or
- (4) Establishing user fees that exceed the cost of dissemination.
[Ref. 72:p. 1]

Interestingly, how would DOD and EC/EDI Government executives respond to Congressional inquiries concerning why a Government/DOD funded center, ECRC, must pay a commercial DOD certified VAN provider for Government FACNET information DOD has located at the NEPs in Ogden, Utah or Columbus, Ohio? Furthermore, no documentation was discovered or provided by DOD personnel concerning any specifically authorized statutes allowing the current VAN/VAS reselling of Government FACNET information. A simple cost effective

alternative, which industry is racing to implement, internet web pages, can satisfy the objectives and intent of EC initiatives.

One solution to the information dissemination is to rip out the role of information dissemination from the architectural paradigm and provide access to such information on a searchable web page. The San Antonio ECRC is already experimenting with such a concept, but must pay a commercial DOD certified VAN for Government FACNET information. San Antonio's web page allows key word and FSC code searches on FACNET solicitations. The San Antonio ECRC web search is an impressive, quick and easy method to search for business opportunities within DOD. If the Government provided access to DLA, Veteran's Administration, and NASA electronic procurement activity in the same fashion as the current search data base is presently configured, nearly all Government electronic procurement would be searchable. Note this is only access to and not control and management of such information. This also reduces the need for any one agency to control or be in charge of one control or system. Each organization could hold on to their own unique processes, if necessary, as long as the search tool was allowed to access the information. A one face, one searchable point would be available to any vendor. The ability to display "one face" through the use of web pages, despite being located and managed at many different locations, is an internet feature that should be capitalized through the EC initiatives. Using web pages also means using a current global commercial standard with global access that is inexpensive to view. Businesses and Government agencies are racing to get on the internet. The standards and precedents for disseminating information on web pages is already well established. The Marine Corps needs to take advantage of this technology and exploit it in its EC/EDI implementation. Solicitation, procurements, and other contracting information can

be globally publicized on web pages, making them easily and cheaply retrievable by vendors.

Many commercial EC/EDI implementation efforts develop close vendor partnerships in order to make a successful transition to EC/EDI. This involves both sharing of risks as well as costs. BP Oil and RJR are two examples where firms paid EC/EDI transition expenses for their small business vendor base. "Sender pays" in EDI is also a common commercial method. [Ref. 71:p. 78] In many industries, 840 RFQ transactions are not used because they are hard and expensive for firms. In line with the "sender pays" concept, the Marine Corps could post procurement information on web pages as its share in the EC/EDI process. This is not an extremely difficult task to accomplish. Each installation has the ability to provide an internet procurement site. If a base is unable to provide such services, an office can purchase a site from a local internet provider. Also, one base could potentially list several separate sites on their account if offices desired to keep such activity in Marine control. Currently there are over twenty sites listed by the Marine Corps internet home page as Marine sites. Web pages are not new to the Corps, and should become an integral part of the EC/EDI implementation plan.

Through web pages, the Marine Corps can both live up to the objectives and intent of EC initiatives, but also to help move closer to a partnership that commercial industry often uses in EC/EDI implementation. Web pages are a simple, cheap, and easy alternative to develop EC/EDI partnerships with our vendor base. Industry is rapidly creating critical mass in its use of internet technology. The Marine Corps should also exploit internet technology and its ability to easily and cheaply distribute information 24 hours a day, thereby fulfilling EC/EDI objectives.

Due to considerations, among them security, the current FACNET architecture is still necessary. Web pages in no way distract, diminish, or threaten the

current EC/EDI architecture. Web pages merely complement the current FACNET structure. This EC/EDI Plan does not advocate scrapping the current FACNET plan, but suggest current technology can be used in different ways to make EC work for both the Government and vendors. An internet based solution in an information dissemination role capitalizes on internet strengths. This EC/EDI plan does not advocate a Government wide transition to internet procurement methods such as NASA is currently experimenting with. Internet methods are not for everyone. There is no single solution or golden EC panacea. However, the Marine Corps must provide flexible tools and electronic options that can be used on a broad basis that reinforces EC/EDI objectives. Internet connectivity and web searches can provide both parties greater flexibility and options needed for EC/EDI implementation, and still comply in full with EC/EDI objectives and intent.

d. Virtual Vendors, Virtual Competition

One aspect DOD is not considering in its EC/EDI implementing concerns sharing of EC/EDI costs with suppliers. This plan does not intend to pay for vendor EC/EDI costs with suppliers. Rather this plan intends to use a common commercial EDI concept, sender pays, and modify the concept via FAST. The great aspect of FAST is it is FREE to all USMC vendors. Message traffic emanating from the contracting office and received by the vendor base via FAST is free. Sending a response to Governments' solicitation is also free. Vendors need only pay for a monthly e-mail account. The Marine Corps pays a slight transaction fee when they purchase the item through FAST. Thus for a short time the Marine Corps "shoulders" the transition to an electronic process as industry does. This is also why the plan is a temporary solution for the Marine Corps. Due to the intense electronic competition from the virtual vendor base of FAST, and eventual FACNET, competition is very keen. Prices obtained through FAST are very competitive and in many areas,

particularly isolated installations, are less than the local vendor base. One of the first electronic bids in Hawaii saved the Army over \$50,000 compared to a previous locally procured item. [Ref. 50] Two ideal areas for Marine Corps use are Hawaii installations, and two California desert stations. Yes, the Corps is "shouldering" the EC/EDI transition costs, but they can do it cheaply through virtual competition. FAST activity also does not prohibit procurement personnel from using common sense. If FAST is not competitive with the local vendor base, purchase items locally. FAST is not the golden panacea to good business judgment, but it is a method to create, develop, and increase vendor demand for EC/EDI.

3. SPS Phase

Because fielding of SPS is not yet solidified, the SPS phase is a moving target and will be confirmed as the selection of SPS is completed. Once SPS selection and fielding dates are received, purchasing offices can notify their vendor base as to the date that the Marine Corps will shift to the SPS phase. The FAST phase in essence provides benefits similar to current VAN/VAS operations. In this regard the vendor and purchasing community receive EC/EDI benefits at a pace and cost that is acceptable to both vendors and purchasing personnel. Once SPS is fielded the Marine Corps will shift entirely to the FACNET structure. In this regard the next hurdle for vendors will be to switch to an electronic process that will accommodate the FACNET structure. More than likely, this will be a VAN/VAS option. In this respect, FAST grooms the vendor base for the VAN/VAS transition. Once firms become accustomed to FAST services, the transition to VAN/VAS will not only be easy, but will be a wise business choice. VAN/VAS operations have many more opportunities to develop business trading partnerships compared to FAST. In this respect, FAST prepares the vendor base for the SPS phase. Another aspect in the concerns the uncertainty of SPS phase and FACNET.

Because SPS is not yet selected, SPS capabilities are not yet fully known. There is vendor hesitancy to commit to EC/EDI if such a commitment is quickly out dated. Furthermore, due to FACNET's problems, there is considerable debate on FACNET's future capabilities. OFPP and industry experts predict FACNET will have to include EDI transactions as well as Web pages and electronic mail. [Ref. 73:p. 11] EDI internet based systems may transform FACNET in the future, and SPS will be part of that process. In this light FAST also protects the vendors from switching to an expensive EDI system that may be abandoned or neglected in the SPS phase. Technology has bypassed the current FACNET architecture. Thus when SPS is fielded the Marine Corps and their vendor base will have the tools to be 100% electronic and begin an integrated EDI solution. Once this occurs, the Marine Corps can fully commit to an electronic paradigm because the tools necessary to accomplish an integrated electronic paradigm will be available to the Marine Corps. Once the Marine Corps is fully able to commit to an electronic process, the vendor base must also choose at this time to clear the next hurdle and leap to a more sophisticated EC/EDI process. Thus EC/EDI capabilities will become a normal cost and technical barrier necessary for business with the Government as well as the Marine Corps.

The EC/EDI Plan permits Marine Corps personnel to learn educate, and experience various electronic commerce methods over a period of time. The plan grows its own experts and provides a flexible option at each and every phase. It views its vendors and suppliers as partners in the transformation process, as industry does. In this respect the Marine Corps is helping their vendor base migrate to EDI, particularly small vendors, while simultaneously fulfilling the intent and objectives of the EC/EDI Presidential Mandate and the Commandant's intent. The plan and its three phases fulfills all six of the President's EC/EDI objectives, while allowing the Marine Corps to abide to the 1997 EC/EDI Mandate. This truly is a win-win solution.

H. OBTAIN SUPPORT AND COMMITMENT FROM SENIOR LEADERSHIP/MANAGEMENT, PURCHASING, AND CROSS FUNCTIONAL ORGANIZATIONS

Prior to implementing the plan, support from senior leadership, management, purchasing personnel, and commitment from cross functional units is necessary. This can only occur from one person within the present organizational structure. Support for EC/EDI implementation must begin at the very top. The Commandant of Marine Corps must issue a White Policy Letter directing the various leaders and offices to abide with the EC/EDI Presidential Mandate and implement EC/EDI as soon as possible. As in industry, the "Champion" of EC/EDI, the one to shepherd and sponsor EC/EDI through the implementation phase, must be in the reporting and contracting chain of command. The best selection for the EC/EDI "Champion" is the Deputy Chief of Staff, I&L, LtGen Brabham. A statement of support for EC/EDI implementation and usage by the Champion, General Brabham, similar to the Army example is necessary. In this fashion, all personnel will know the importance of EC/EDI and its vital role in future Marine Corps operations and efficiencies. Furthermore, it should direct, not suggest, that subordinates put forth their best effort to abide with their Commander in Chief's desire for an EC/EDI process. The letter will also contain support and signatures of all the various functional leaders of LP, LF, LC, and LB. The General's direction and support of EC/EDI will wed the purchasing personnel, hardware/ITM personnel, finance, installations and policy makers of the various organizations into one team effort, linking implementation with policy. Up to the present, this has not been accomplished between DOD policy and implementation personnel. [Ref. 21] DOD leaders may be able to afford the mismatch between EC/EDI implementation and procurement policy, but the Marine Corps no longer can afford such divisiveness. If such critical support and commitment does not occur, the Marine Corps should not ignore the EC/EDI Mandate

and FAR regulations, or only voice support for EC/EDI efforts, but pursue an exemption for EC/EDI capabilities from the Secretary of Defense as indicated in the FAR. An exemption is risky as DFAS and the other services rapidly approach advanced stages of EC/EDI. Such an exemption carries substantial risk, technologically, and is not recommended.

An EC/EDI exemption will lock out any future savings and efficiencies EC/EDI processes have. An exemption would also lock out any Marine Corps input in future technology options related to EC/EDI. The Marine Corps would find itself technologically isolated as businesses and Government increasingly use EC/EDI methods. If senior leadership ultimately supports EC/EDI implementation, the first step is to elevate and establish an EC/EDI Office that reports directly to LtGen Brabham.

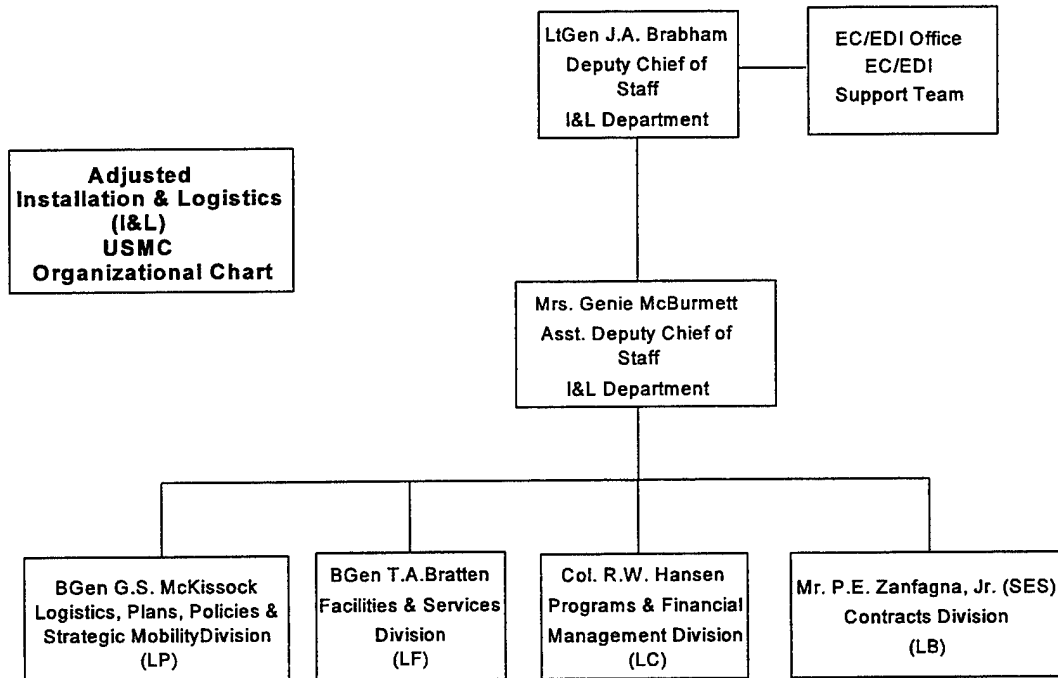
I. EC/EDI OFFICE

The EC/EDI PM responsibilities will be reassigned to the EC/EDI Office. This office will be assigned to report directly to LtGen Brabham as seen in the organization chart below. This structure supports not only the General's role as the EC/EDI "champion," but also continues to bind the operational and implementation aspects of EC/EDI with policy. Day to day operations will be assigned to a full time EC/EDI Director/PM. The director will aid the "champion" in directing the EC/EDI vision and strategy toward a paperless process by running the day to day operations of EC/EDI implementation. The office is similar to 3M's EC/EDI Procurement office or industry's EDI steering committees. The EC/EDI Office will follow the FedEx example and conduct weekly meetings with the functional organizations directly under General Brabham. Once a month an EC/EDI meeting will be chaired by General Brabham and all of his subordinates to keep abreast of EC/EDI progress as well as keep momentum and high level interest. Although the founder and CEO of

FedEx, Fred Smith, attends monthly EC/EDI meetings, the demands and travels placed upon the Commandant may prohibit his regular attendance at monthly EC/EDI meetings. The Commandant may wish to visit EC/EDI monthly meetings, when possible, to exercise his personal support and priority of EC/EDI as well as to emphasize command support for EC/EDI implementation. EC/EDI progress reports, however, will ensure the Commandant is informed of Marine Corps EC/EDI progress. The structural change, high attention, increased presence, senior "champion" and top level priority will greatly aid implementation at all levels. The EC/EDI Office will also be staffed and funded beyond the fielding of SPS. There are many EC/EDI issues lacking in present Marine Corps implementation efforts that must be addressed by the EC/EDI Office. One of these issues is EC/EDI education efforts.

The Marine Corps EC/EDI Office will establish an EC/EDI Support Team to improve the quality and accessibility of EC/EDI training, education and business related information to all Marine Corps personnel as well as its vendor base. In this manner, the corporate knowledge of EC/EDI within the Marine Corps will begin to grow and expand. The center will include a conference room for conducting EC/EDI training, several computer workstations that can be used to access electronically available EC/EDI Government and business information, and a wide array of EC/EDI information, periodicals and journals and video teleconferencing equipment. The establishment of the Corps' EC/EDI Support Team is a significant element in General Brabham's "champion" role to solidify and join cross functional support, commitment, and dedication to EC/EDI initiatives.

The focus of the EC/EDI Support Team is to use state-of-the-art electronic media, including the internet, to effectively place the resources of the EC/EDI Support Team on the desk of any Marine, GS employee, or USMC vendor. The center will collect, develop, and expeditiously disseminate training/education material. It will



also distribute topical commercial EC/EDI information to personnel and offices affected by EC/EDI implementation. The Support Team also provides immediate, on-line feedback to questions and problems related to EC/EDI implementation. One major task of this team will be to aid the contracting officer's search in sole source scenarios where firms do not wish to convert to EC/EDI methods. In this respect the office can be a tool to help convince USMC vendors to switch to EC/EDI or find an alternative EC/EDI firm to replace the non EC/EDI firm.

Key features of the EC/EDI Support Team include:

- Communication links and shared USMC wide vendor database to USMC contracting offices;
- Immediate on-line internet access to all USMC solicitations;
- Immediate on-line internet availability of information related to the status of on-going acquisitions and current USMC contracts;

- EC/EDI outreach program, including the sponsorship of EC/EDI seminars;
- A centralized library of information resources, both in hard-copy and electronic form;
- On-line internet access to EC/EDI procurement policy and regulations;
- EC/EDI best practices and benchmarking information throughout USMC, DOD, Government, and industry available via internet;
- USMC personnel/vendor E-mail list for EC/EDI updates;
- 1-800 telephone number and fax capabilities for Marine personnel and USMC vendors;
- Develop and maintain a core group of EDI experts to provide direction and management of EC/EDI within the Marine Corps, interface and integrate internal and external organization EC/EDI efforts and policy, and participate in commercial EC/EDI professional organizations;
- Continually monitor, improve, innovate, and educate EC/EDI users.

Through the EC/EDI Support Team, the Corps will increase both USMC personnel and vendor knowledge of EC/EDI, its policies and practices. Additionally, the EC/EDI Support Team will facilitate increased EC/EDI participation, feedback, ownership and acceptance of EC/EDI within the Marine Corps as well as their vendor base.

Borrowing a FedEx phrase, "you cannot manage what you can't measure", the following measurements are part of the EC/EDI plan:

Measurement	Number	% Number Represents	Dollar Value of Transactions	% Dollar Value Represents
Total EDI Capable Contracting Offices				
Total Non-EDI Capable Contracting Offices				
Total Contracting Offices		100%		100%
Total Paper Based Transactions				
Total IMPAC Credit Card Transactions				
Total FAST Transactions				
Total EDI Transactions				
Total Transactions		100%		100%
Total E-mail Capable Vendors				
Total FAST Capable Vendors				
Total EDI Capable Vendors				
Total Vendors		100%		100%
EDI returned "No Quotes"-RFQ Returned from vendor base with no quote				
Line Items Procured Through EDI				
EDI RFQs Received				

Measurement	Number	% Number Represents	Dollar Value of Transactions	% Dollar Value Represents
EDI RFQs Received Requiring Buyer Intervention				
No Quotes By Stock Class				
EDI Transaction Sets Being Used				
EDI Complaints				

All functional leaders, purchasing personnel, financial personnel, contracting officers will be evaluated on how they improved their EC/EDI capabilities during the evaluation period. Each and every contracting personnel will be evaluated on how much electronic activity they transacted or what improvements were made to further enhance the Marine Corps' electronic strategy. In this manner, promotion, increased pay or any pay incentives will be directly related to EC/EDI activity.

Summarizing, the EC/EDI Office will have firm support from the Corps' EC/EDI "champion," the staffing and funding necessary to manage the EC/EDI implementation process on a daily basis, provide a strong leader and single POC for EC/EDI within the Marine Corps, provide the material and tools necessary to make EC/EDI successful within the purchasing office as well as their vendor base, and provide a measurement capability to monitor the progress of EC/EDI implementation. Three distinct phases guide the Marine Corps' EC/EDI plan to fulfill the strategic objective: eliminate the current paper purchasing/payment cycle and transform it into a 100% electronic process.

USMC EDI Implementation Checklist

	Yes	No
Has management support been obtained?	✓	
Has purchasing department support been obtained?	✓	
Has commitment to EDI been obtained from cross functional organization personnel?	✓	
Has an appropriate organization structure for the EDI effort been established?	✓	
Has a pilot been established?	✓	
Has a method for reviewing the results, as well as modifying results, of the pilot program been developed?	✓	
Have policies and procedures for both purchases and suppliers been finalized?	✓	
Has broad-based implementation been established?	✓	
Have plans been developed to review and measure benefits and costs?	✓	
Has a system for continual monitoring and improvement of EDI been developed?	✓	

VII. CONCLUSIONS

A. CONCLUSIONS

The purpose of this research was to examine the Marine Corps' EC/EDI implementation plans. Through analysis of successful commercial implementation practices, a model was developed to evaluate current Marine Corps EC/EDI efforts. As businesses and other Government agencies continue to move toward an EC/EDI paradigm, it is vital that the Marine Corps also sheds its paper processes. The potential advantages and savings in EC/EDI processes are necessary as Marine Corps budgets continue to decline. In essence the Marine Corps must do more with less; EC/EDI is but one tool to help in that endeavor. The principal conclusions from previous chapters will now be presented.

1. EC/EDI Can No Longer Be Ignored

EC/EDI is not only mandated by the Commander in Chief, President Clinton, but also is part of the Commandant's desires of a more efficient and effective Marine Corps. Furthermore, EC takes many forms such as e-mail and internet web pages in addition to EDI. EC does not equal EDI. EDI is just one option within EC. Kelman of OFPP also promotes use of web technology in procurement. Wheeler predicts "FACNET architecture will have to include not only EDI transaction sets but also web pages and electronic mail." [Ref. 73:p. 10] The Marine Corps must capitalize on the wide choice of EC options available to accomplish EC/EDI initiatives. Negative consequences of EC/EDI implementation failure, such as Marine Corps incompatibility with DFAS FEDI systems or mandatory workforce reductions, threaten future Marine Corps operations.

2. Applicability of Commercial EC/EDI Models in Marine Corps EC/EDI Implementation Efforts

Commercial EC/EDI implementation models, successful indicators and traits are very germane to the implementation of EC/EDI within Government, particularly the Marine Corps. Firms much larger as well as much smaller than the Marine have successfully implemented EC/EDI. Although obstacles, such as communication and cross functional support are much harder to coordinate and manage within the Marine Corps, EC/EDI can be implemented successfully if proper implementation methods are followed. Based upon a modified commercial EC/EDI model, the following items are indicative of successful EC/EDI traits.

- An implementation plan
- Top management support
- Purchasing support
- Funding
- Dedicated manpower
- Supplier commitment
- Cross functional input and support
- Measurement of results
- Education
- Integration [Ref. 1:p. 3]

3. Poor Results of USMC EC/EDI Implementation Efforts

Because of poor implementation efforts, EC/EDI implementation is in jeopardy of failure. Only one trait is present in current USMC EC/EDI implementation efforts.

The Marine Corps' EC/EDI implementation efforts are rudderless; the Corps' EC/EDI process lacks vision, direction, purpose, and goals. Critical failure points in Marine implementation are: lack of support, commitment, education and integration. Immediate action, intervention, interest and commitment of resources from senior Marine Corps leadership must occur in order to successfully implement EC/EDI Marine Corps wide. Marine Corps EC/EDI implementation can meet and exceed the Presidential EC/EDI Mandate in 1997, despite technical difficulties, only if immediate action occurs.

4. U.S. Marine Corps Must Implement an EC/EDI Strategy

Because Marine EC/EDI implementation lacks any vision, plan, or goals, an EC/EDI Implementation Strategy must be initiated to focus EC/EDI efforts within the Marine Corps. The following strategy is suggested: eliminate the paper purchasing/payment cycle and all paper communication between industry and USMC activities by transforming it into a 100% electronic process.

5. U.S. Marine Corps Must Develop an EC/EDI Implementation Plan

In order to attain the vision of EC/EDI within the Marine Corps, a three phase plan that raises the use and sophistication of EC/EDI usage is suggested:

a. E-mail Phase

The initial phase of the plan is an e-mail phase. E-mail is a low tech and easy method to begin transmitting communications to and from Marine Corps contracting offices and vendors. This phase will be a 12 month hurdle for vendors to overcome. If vendors do not become e-mail capable, they will be dropped from the vendor list. E-mail is a simple tool that Marine Corps personnel religiously use on a daily basis. E-mail is also commonly used in businesses today. Thus e-mail is an easy, acceptable, low tech solution to develop purchasing support and vendor support. Those who do not wish to make the e-mail jump will be referred to the FAST

Electronic Broker system. E-mail helps bridge the technical gap and hooks users on to the concept and use of computers in a purchasing environment. E-mail is also a cheap and user friendly alternative.

b. FAST Phase

The FAST phase is named after a Government sponsored project titled FAST Electronic Broker. FAST is a temporary tool to overcome difficulties the Marine Corps presently faces with BCAS/MADES EC/EDI capabilities as well as to migrate the vendor base to an electronic process. FAST is not intended to replace or bypass FACNET or EDI methods, but merely a method to help jump-start the EC/EDI implementation process. FAST is a project initiated by the Advanced Research Projects Agency (ARPA) in cooperation with the Information Sciences Institute of the University of Southern California. FAST is a rapid and reliable purchasing tool based upon electronic mail, EDI, FAX, phone and computers. FAST has a wide base of suppliers, distributors and manufacturers to tap into, including Government databases, for a robust purchasing mechanism. FAST's strength is in the small purchase arena as well as unique item purchases. Essentially, the Marine Corps can use FAST to purchase items via e-mail, giving the Marine Corps EC capabilities, despite the BCAS/MADES problems, in order to fulfill the President's EC/EDI Mandate without additional equipment costs incurred by the Marine Corps. FAST is an ARPA project, which supports the Commandant's CWL guidance. FAST is a low-tech, easy option for both purchasing personnel as well as vendors that has been approved by OFPP as abiding with all procurement legislation and regulations.

c. SPS Phase

Once SPS is fielded, the Marine Corps will shift entirely to the FACNET structure. When SPS is fielded the Marine Corps will have the tools for a 100% electronic process as well as an integrated EDI/FEDI procurement/payment

cycle. Once this occurs, the Marine Corps can fully commit to an electronic paradigm because the tools necessary to accomplish an integrated electronic paradigm will be available on a Marine Corps wide basis. Once the entire Marine Corps is fully able to commit to an electronic process, the vendor base must also leap with the Marine Corps to a more sophisticated EC/EDI process which must be FACNET capable. In this regard the next hurdle for vendors will be to switch to an electronic process that will accommodate FACNET capabilities. Thus in the SPS phase, EC/EDI capabilities will become a normal cost and technical barrier all firms must overcome in order to conduct business with the Government as well as the Marine Corps.

6. U.S. Marine Corps Must Develop EC/EDI Implementation Goals

In order to successfully complete the plan and its three phases, the following goals are recommended:

- Obtain support and commitment for EC/EDI on a Marine Corps wide basis, through a White Policy Letter statements by formally expressing the Commandant's support for EC/EDI implementation and;
- Obtain high level support within I&L, by way of formal, written support and commitment by Deputy Chief of Staff I&L, LtGen Brabham, and his subordinate cross functional leaders through a directive and policy statement demanding immediate EC/EDI implementation efforts. This letter will contain signatures of all subordinates to LtGen Brabham as well as the funding necessary to make EC/EDI implementation possible;
- Establish measurement metrics and include mandatory comments on all I&L personnel fitness reports or civilian evaluations, to include I&L directors, contracting officers, and system managers, on their improvement of EC/EDI implementation within their office or organization. Directly link fitness reports, evaluations, promotions, pay, bonuses, and incentives directly to improvement of EC/EDI implementation and processes;

- Make the entire process, from purchase to payments, electronic using EC methods such as such as e-mail, internet, as well as EDI;
- Facilitate and conduct 100% of all Marine Corps obligations and payments through EDI/FEDI processes;
- Establish an EC/EDI Office and EC/EDI Support Team in order to manage EC/EDI implementation on a daily basis, establish an SPS program manager within the EC/EDI Office, provide EC/EDI support for Marine Corps personnel and their vendor's, track measure and report EC/EDI implementation metrics and progress to the Commandant through Deputy Chief of Staff, I&L;
- Re-engineer the paper process at the local level in order to eliminate non-critical tasks that do not add value;
- Capture data at the source and find methods for users to begin the electronic process;
- Develop, gather and deliver training and education material for procurement personnel and their vendors;
- Train and educate Marine Corps personnel on EC/EDI implementation and the benefits to EC/EDI;
- Keep people informed of EC/EDI implementation process and accomplishments;
- Empower and encourage employees to contribute and suggest changes to enhance EC/EDI implementation or processes and award suggestions with incentives and bonuses;
- Eliminate LBO control and management of ADP and automated procurement systems and empower local levels to manage their processes;
- Focus on industry's purchase order success instead of DOD's RFQ focus; use internet to distribute RFQs;

7. U.S. Marine Corps Must Organize and Commit to an EC/EDI Office and EC/EDI Support Team

The EC/EDI office will be the sole POC for entire the Marine Corps in all aspects of EC/EDI. The office, among other things, will establish an EC/EDI Support Team and provide the following:

- Communication links and shared USMC wide vendor database to USMC contracting offices;
- Immediate on-line internet access to all USMC solicitations;
- Immediate on-line internet availability of information related to the status of on-going acquisitions and current USMC contracts;
- EC/EDI outreach program, including the sponsorship of EC/EDI seminars;
- A centralized library of information resources, both in hard-copy and electronic form;
- On-line internet access to EC/EDI procurement policy and regulations;
- EC/EDI best practices and benchmarking information throughout USMC, DOD, Government, and industry available via internet;
- USMC personnel/vendor e-mail list for EC/EDI updates;
- 1-800 telephone number and fax capabilities for Marine personnel and USMC vendors;
- Develop and maintain a core group of EDI experts to provide direction and management of EC/EDI within the Marine Corps, interface and integrate internal and external organization EC/EDI efforts and policy, and participate in commercial EC/EDI professional organizations in order to expand the EC/EDI vendor base.

B. AREAS FOR FURTHER RESEARCH

The following related subjects should be targeted for further research:

- Investigate and develop an electronic automated reconciliation process for Government credit card reconciliation within the SPS framework or other potential Marine Corps use of SPS capabilities;
- Investigate and develop a business case to outsource necessary EC/EDI expertise for EC/EDI Office functions;
- Investigate and develop a business case to outsource necessary skills to manage the Marine Corps' vendor base in their transition to EC/EDI capabilities as industry does;
- Develop a case study on BCAS/MADES and SACS selection process in order to ascertain any lessons learned for future ADP acquisitions;
- Investigate commercial internet search sites in order to develop a partnership for USMC wide procurement search functions and USMC internet capabilities at each contracting office;
- Examine ECRC capabilities and investigate whether a partnership can be established in order to closely integrate ECRC within the EC/EDI implementation plan.

APPENDIX A. EC/EDI CONCEPTUAL MODEL

EDI Implementation Process Flow

- High Volume of Paperwork Transactions
- Numerous Suppliers
- Lengthy Administrative Lead Times
- Performance Improvement Operations
- Commitment

- Detailed Evaluation
- Total Company Commitment

- Organization Alternative Evaluation

- Detailed Understanding of ANSI X12 Standard & Legal/Auditing Requirements

- Team Work and Coordination by Purchasing, Systems, Users, Suppliers, Third Party, and Software System Providers

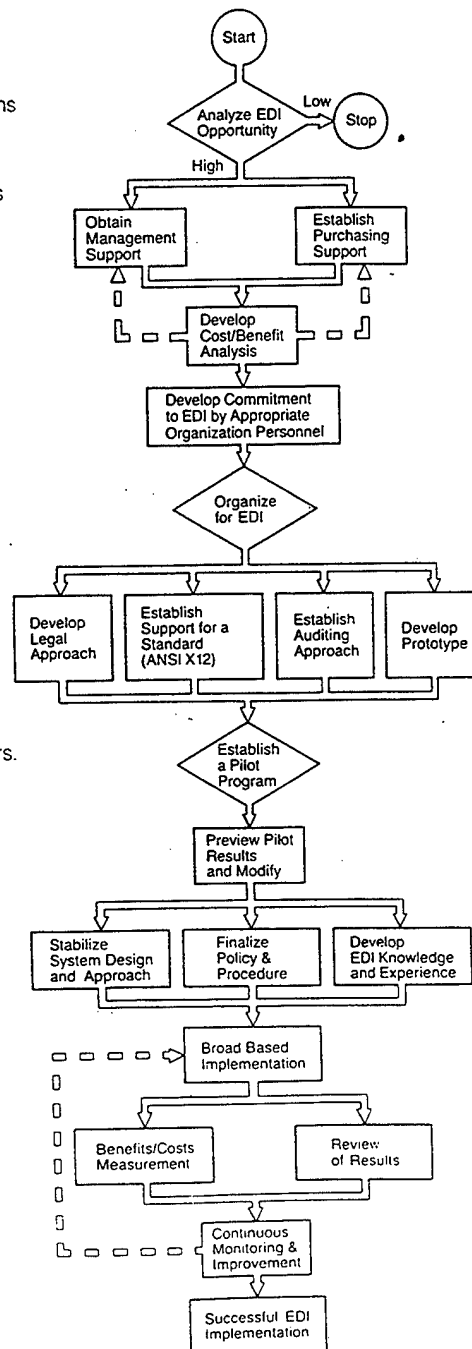
- Testing Review and Measurement

- Preview of Systems
- EDI Policy & Procedure
- EDI Knowledge & Experience

- Plan & Schedule

- Team Review

- Organizational Responsibility Assigned



Robert M. Monczka and Joseph R. Carter, Electronic Data Interchange: Managing Implementation in a purchasing Environment, Michigan State University, East Lansing, Michigan, 1987

Analyze EDI's Opportunity

The first task associated with the EDI implementation process is determining whether there is an EDI opportunity in the organization. Identification of the opportunity and/or perceived benefits may be driven by executives, purchasing and/or marketing and sales personnel. Some of the factors driving the firm toward EDI in purchasing include:

- High volume of paperwork transaction documents.
- Numerous suppliers.
- Length of the internal administration lead-time associated with the purchasing cycle.
- Need to develop headcount reductions or new hire avoidance, or both.
- Need to increase professionalization of purchasing personnel.
- Customers may require EDI.

Determining the EDI opportunity is a go/no go situation and could be very abbreviated. If the opportunity is perceived to be low, then the effort would stop. If the perceived benefits appear to outweigh the associated costs, the work effort would continue.

This task should be able to be accomplished within a thirty day time frame by two individuals. Two people are appropriate to foster an interchange of ideas. Likely candidates would be from purchasing and systems. These individuals should spearhead the definition of EDI within the firm and conduct interviews with a variety of key people to discuss EDI and determine the perceived value of an EDI effort. Those interviewed should include personnel from top management, accounting and finance, receiving, auditing, legal, purchasing and other materials functions.

Obtain Management Support

If the company perceives positive EDI opportunity, it becomes necessary for purchasing and materials management to obtain higher management support. This next level of management support is not necessarily from the most senior executive management, but primarily from key leaders and other high level functional managers throughout the firm. EDI can be implemented without the same magnitude of effort as would be required in a Just-In-Time implementation process in purchasing or manufacturing.

Major critical success factors to developing management support include:

- Creating the belief that the fundamental mechanism of doing business between buyers and sellers needs to change from a historically paperwork dominated transaction system to an electronically oriented approach.
- Identifying and describing the "future world" with high level benefits or competitive advantages that would accrue to the buying firm from EDI. Examples of this include increased product responsiveness, headcount reduction, manufacturing and purchasing leadtime reduction, paperless operations, inventory reduction, and greater cost reduction opportunity within purchasing, and so forth. The EDI drivers will vary from company to company and their importance will depend upon the anticipated degree of funding required to support the EDI effort.
- A general developmental plan of how to get to the "future world" of electronic transmission of transaction documents. It would be useful to have a broad-based plan of the

general requirements for the firm to move from the current to the future situation.

- Obtaining preliminary support from suppliers who would be willing to participate in the EDI effort. This support would indicate to top management that there is a willing group of firms whom, on a joint basis, would like to reduce transaction costs and enhance the way in which buyer and seller communicate.

Develop Purchasing Support

It is extremely important to obtain support for EDI from middle management and operating level personnel in purchasing. These are the people that will have to ensure the implementation success of EDI. They are the primary users of EDI and will be the communicators to outside suppliers about the necessity, importance, and benefits of EDI.

A number of specific actions can be taken by those charged with EDI implementation responsibilities to obtain broad-based purchasing support. These include:

- Develop an awareness by purchasing management and operating personnel about the benefits of EDI to be gained within purchasing. This should include direct face-to-face meetings with appropriate personnel.
- Review the EDI plan and an implementation schedule with systems personnel. Be able to provide this implementation plan as scheduled to effected purchasing personnel.
- Have key purchasing personnel on the EDI implementation team. Leaders need to participate in the design and development of the EDI system and be able to communicate and respond to questions regarding how EDI will effect others within the purchasing department.

The development of complete management and purchasing (management and operations) support is absolutely necessary to develop the commitment required for EDI success. Without commitment of these key parties, it could be very difficult to complete all the tasks necessary to achieve the most successful EDI system.

Develop Cost/Benefit Analysis

Another important task in implementing EDI is developing a specific cost-benefit analysis. Even though the respondents in the survey research indicated that a detailed cost/benefit analysis was not generally done, it will be increasingly important to do so as more firms begin to develop EDI applications so as to justify application of resources to the effort. A detailed discussion of cost/benefit analysis is included in Chapter 4.

Develop Commitment to EDI

By Appropriate Organization Personnel

The organizations that participated in this study believed it was important to establish company wide support for EDI by developing an EDI presentation. This presentation was designed to develop awareness on the part of key functional personnel in departments such as legal, auditing, accounting and other materials functions. Furthermore, the role of these non-purchasing functions had to be established based upon what their anticipated contribution to the EDI development and implementation effort could be.

Organization for the EDI Effort

Numerous alternatives exist regarding how a firm might organize for the EDI effort. These are discussed in Chapter 4. Two principles that should be followed in organizing for the

Robert M. Monczka and Joseph R. Carter, *Electronic Data Interchange: Managing Implementation in a purchasing Environment*, Michigan State University, East Lansing, Michigan, 1987

EDI effort are: (1) clear leadership of the effort must be established and (2) the effort be multi-functional in scope. An emphasis on coordinating the appropriate functional inputs and considerations is also important.

Develop Legal Consideration, Policies and Practices

Since a signed contract will not accompany an EDI transmission, a separate contract governing the terms and conditions associated with doing business using EDI needs to be established. Key content areas in this contract include the following, which are based on a review of samples from the firms participating in the research study.

- Purchase orders are to be transmitted electronically between buyer/seller.
- Buyer/seller authorizes the Third-Party Network to interchange data.
- Shipment location of scheduled delivery needs to be identified.
- To avoid errors resulting from network malfunctions, trading partners are required to return functional acknowledgements of transmitted documents or received transactions.
- Company standard terms of condition, set forth in the attachment, shall be applicable to all purchase orders placed electronically.
- Length of the contract needs to be established.
- Designation of who pays for the Third-Party Network and other services must be established.
- Support needs to be established with the supplier for the document transaction standards (ANSI X12).

Further detailed examples are shown in Chapter 7, Legal Issues.

Establish Support for Transaction Document Standards (ANSI X12)

It is becoming apparent that firms should further efforts to develop support for the ANSI X12 standard and provide basic information to all concerned about why a document transaction standard is necessary. In addition information about why the ANSI X12 should be the appropriate standard needs to be provided.

Special actions that should be taken include:

- Obtain the ANSI X12 standards.
- Begin to work with appropriate industry groups.
- Join X12 subcommittee.
- Develop systems personnel knowledge about the ANSI X12 standards and have current transaction documents mapped to X12 standards.

Develop Auditing Considerations, Policy and Practices

Although auditing problems do not appear to be a problem based upon the survey interviews, it is important that purchasing and EDI implementation teams work closely with the auditing department to establish guidelines for auditing within the EDI system. Since Electronic Data Interchange maintains data electronically, specific practices and techniques that will have to be used in the audit process will be somewhat different than manual practices. How the audit will take place should be clearly established and an auditor should participate in the design and development of EDI applications. Furthermore, the audit should promote productivity improvement in procurement rather than fostering an electronic mirror of the current situation.

Develop System Application Capability

It is important that a prototype EDI application be developed. Included must be a mapping from the current system to ANSI X12, with translation protocol established. First, an interface with the existing system must be done through a file extraction. Second, software must be established for the translation.

This will enable purchasing and the supplier to understand what and how the EDI system would operate. The prototype would be a much smaller application than a full pilot test and would involve parties from both the buying and the selling firm.

Establish a Pilot Program

Establishment of a pilot program is a key ingredient to the overall success of the EDI effort. Failure to manage this pilot program in an effective manner can result in failure of the overall EDI effort. Key pilot program tasks which are further discussed in Chapter 4 include:

- Establishing the specific documents to be transmitted by EDI.
- Selecting the hardware and software for the EDI effort.
- Selecting a Third-Party Network when appropriate. In all likelihood, the use of Third-Party Networks will dramatically increase in the future.
- Developing awareness and support on the part of key suppliers for the EDI effort and selecting specific suppliers to participate in the EDI pilot program.
- Providing suppliers with the necessary education and training about the EDI system.
- Training appropriate internal purchasing personnel.
- Developing the test data for a pilot.
- Conducting the pilot program.

Review Results of the Pilot Program and Modify

The pilot should provide information regarding the EDI implementation effort so that an operational EDI system can be implemented with a minimum degree of difficulty. There are a number of key questions that need to be answered during the pilot program review. These questions are:

1. Is the system adequate and relevant to perform the necessary EDI functions?
2. What is the operational response time for working with the EDI system?
3. Does the hardware and software actually work under trial conditions?
4. Are there any problems with the Third-Party Network, and what are they?
5. What kind of error rates are there?
6. How effective is the system control, security and adaptability for audit?
7. What is the storage and operation capacity of the system?
8. How easy or difficult does it appear the system would be to implement with training on a broad basis?
9. How easy is the system to work with from a user perspective?
10. What will be the apparent cost effectiveness of the system as it relates to personnel utilization and work reduction efforts in purchasing and other areas?

Each of these questions must be carefully studied. Answers of both a quantitative and qualitative nature should be established.

Robert M. Monczka and Joseph R. Carter, Electronic Data Interchange: Managing Implementation in a purchasing Environment, Michigan State University, East Lansing, Michigan, 1987

Stabilize Systems Design and Approach

Prior to the broad based implementation of EDI, all system design decisions should be stabilized including hardware, software, third party networks, payment and cost responsibilities, standards (ANSI X12) and system and communication protocols including transmission structures. The key to a stable system design will certainly be the applications software and business practices. Generally, hardware aspects will be more consistent. It is necessary that the user has full confidence in the application software and achieves consistent results from that software.

Finalize Policy and Procedure for Purchasing, Suppliers and EDI

Policies and procedures to guide the use of EDI between the buying and selling organizations needs to be established and clearly understood. Both buyer and seller must know what to expect under an EDI effort. Considerations include:

1. Identify all of the systems and procedures affected by EDI implementation and then establish needed changes in these policies and procedures to support EDI.
2. Develop EDI suppliers and, through policy and procedure, define what those suppliers will be expected to do.
3. Establish a contractual agreement to do business electronically.
4. Contact appropriate supplier internal personnel with regard to policy and procedure changes.

Establish Broad-Based Implementation

To fully establish a broad based implementation of EDI requires that both buying and selling firms now act as facilitators of change with a significant number of personnel involved. It is important that people who were involved in the pilot be an active part of the broad based implementation.

The firm initiating the EDI effort will have to ensure that clear-cut responsibilities and a plan have been established for EDI implementation. The plan should include the transactions to be implemented, maintenance of data integrity, supplier responsibilities, the providing of necessary education and training, and scheduling. Furthermore, parallel runs by application would generally be appropriate, unless a very quick implementation was required.

Conduct Review and Measure Benefits and Costs

A means to review and evaluate the success of EDI is needed as more suppliers and transactions are established. The EDI effort should be monitored to review progress and improve the use of EDI. Problems need to be quickly identified so that solutions can be developed to minimize any negative reactions. The EDI director and an implementation committee should have centralized responsibility to make changes in the EDI system when necessary.

This committee should be charged with measuring error rates from the system and promoting acceptance of the system, both internally and at the suppliers. In the end, the critical question is whether the data that was to be transmitted between buyer and seller was actually received. Data transmission and receipt anomalies should be identified and causality determined.

The committee should also be concerned with an audit function. They should document the apparent financial and nonfinancial costs and benefits associated with EDI.

Continually Monitor and Improve the Application of EDI

For EDI to successfully operate over time, with hundreds of suppliers, numerous transaction documents, and thousands of transactions, it is critical that a person be charged with the responsibility to continually monitor and improve the EDI system. The overall improvement effort should be a responsibility of purchasing, systems, and suppliers.

There also needs to be an emphasis on controlling the EDI process. This includes measurement of the number of transactions between buyer and supplier and functional acknowledgment of receipts to ensure that transactions are received. Emphasis needs to be placed on measuring and controlling the EDI process to ensure accuracy.

Successful EDI Implementation

All of the above activities are necessary to ensure the success of the EDI effort. Exhibit 3-2 is an appropriate check list which identifies necessary actions which should be completed to increase the likelihood of success of the EDI effort. Furthermore, the size and complexity of the existing system will influence the degree of difficulty of implementing EDI.

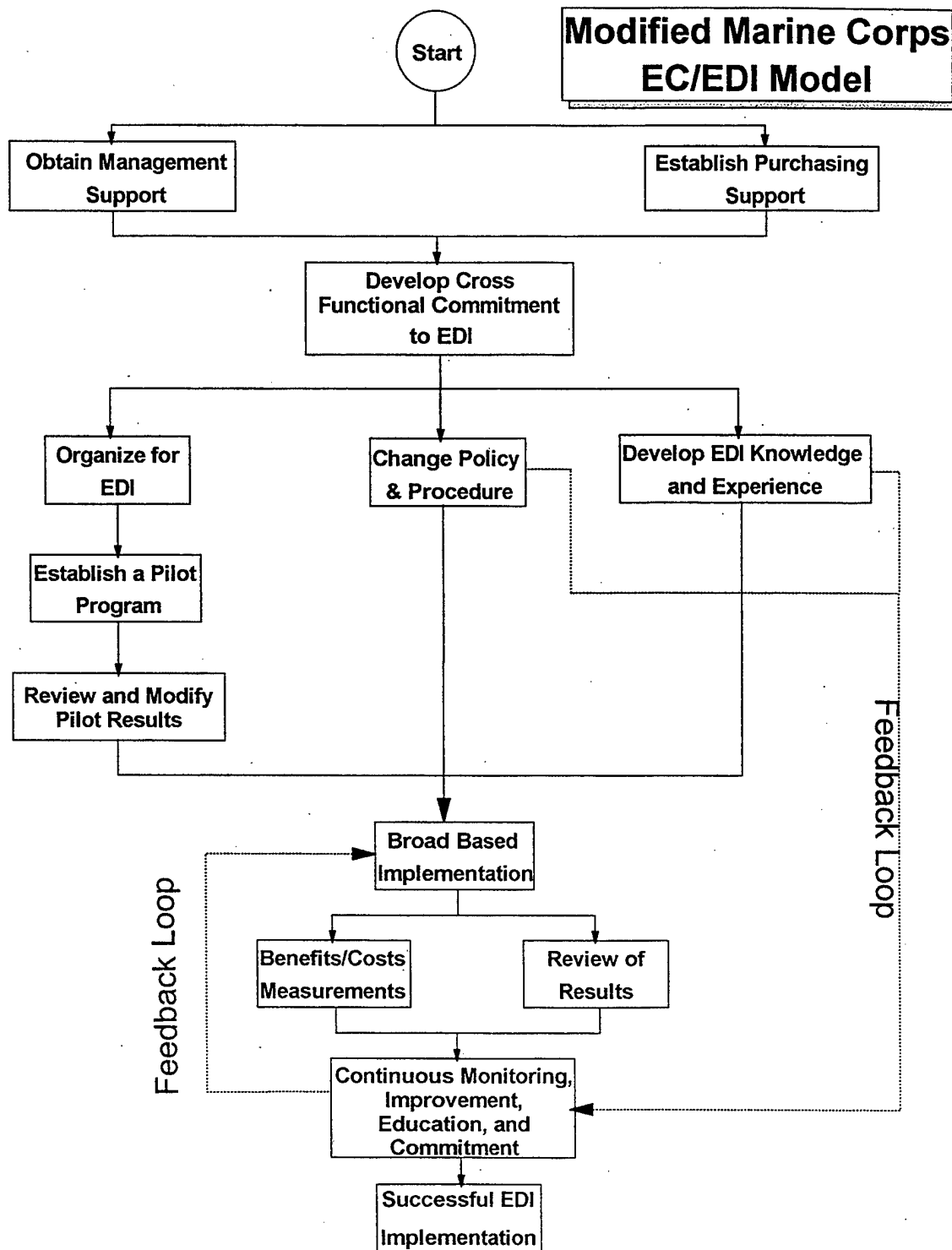
Robert M. Monczka and Joseph R. Carter, Electronic Data Interchange: Managing Implementation in a purchasing Environment, Michigan State University, East Lansing, Michigan, 1987

EDI Implementation Checklist

	Yes	No
Does your firm have an EDI opportunity?		
Has management support been obtained?		
Has purchasing department support been obtained?		
Has cost/benefit analysis been completed?		
Has commitment to EDI been obtained from appropriate organization personnel (legal, auditing, accounting, materials)?		
Has an appropriate organization structure for the EDI effort been established?		
Have legal considerations, policies and practices been developed?		
Has support for transactions document standards (ANSI X12) been established?		
Have auditing policies and practices been considered?		
Has the system application capability been evaluated?		
Has a pilot program been established?		
Has a method for reviewing the results, as well as modifying results, of the pilot program been developed?		
Have all systems design decisions been established?		
Have policies and procedures for both purchases and suppliers been finalized?		
Has broad-based implementation been established?		
Have plans been developed to review and measure benefits and costs?		
Has a system for continual monitoring and improvement of EDI been developed?		

Robert M. Monczka and Joseph R. Carter, Electronic Data Interchange: Managing Implementation in a Purchasing Environment, Michigan State University, East Lansing, Michigan, 1987

APPENDIX B. USMC EC/EDI MODEL



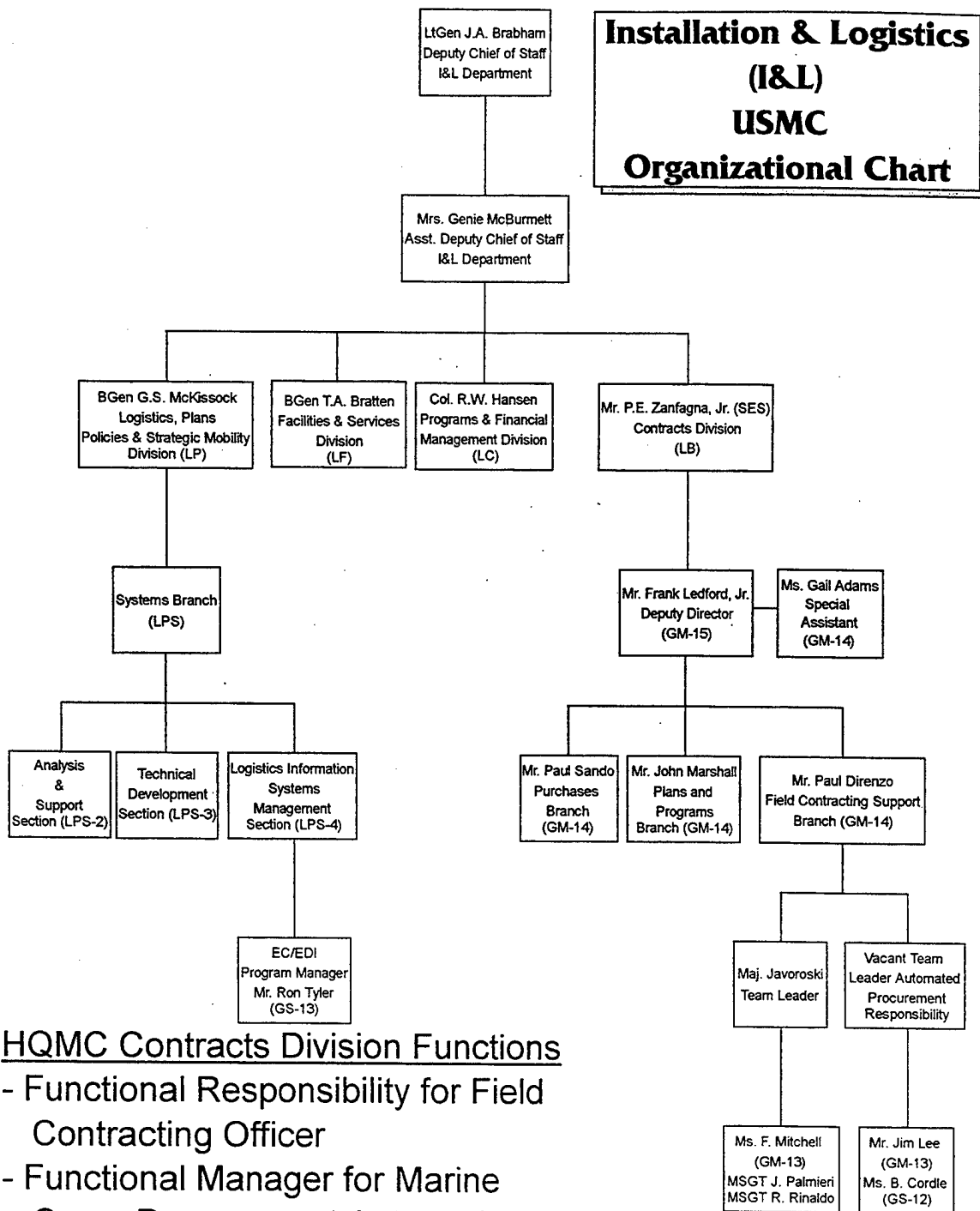
USMC

EDI Implementation Checklist

	Yes	No
Has management support been obtained?		
Has purchasing department support been obtained?		
Has commitment to EDI been obtained from cross functional organization personnel?		
Has an appropriate organization structure for the EDI effort been established?		
Has a pilot been established?		
Has a method for reviewing the results, as well as modifying results, of the pilot program been developed?		
Have policies and procedures for both purchases and suppliers been finalized?		
Has broad-based implementation been established?		
Have plans been developed to review and measure benefits and costs?		
Has a system for continual monitoring and improvement of EDI been developed?		

Robert M. Monczka and Joseph R. Carter, Electronic Data Interchange: Managing Implementation in a Purchasing Environment, Michigan State University, East Lansing, Michigan, 1987

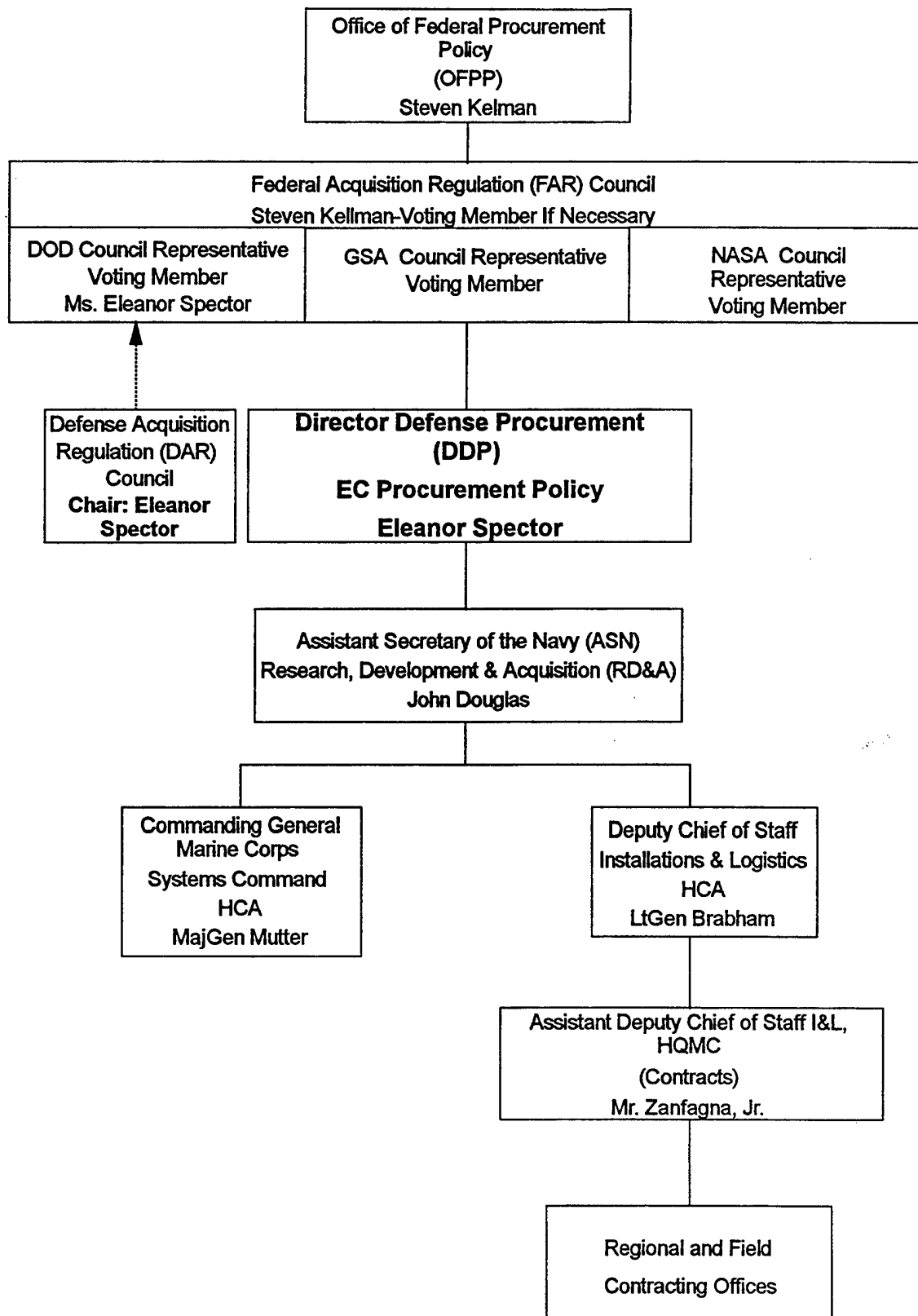
APPENDIX C. USMC I&L ORGANIZATION CHART

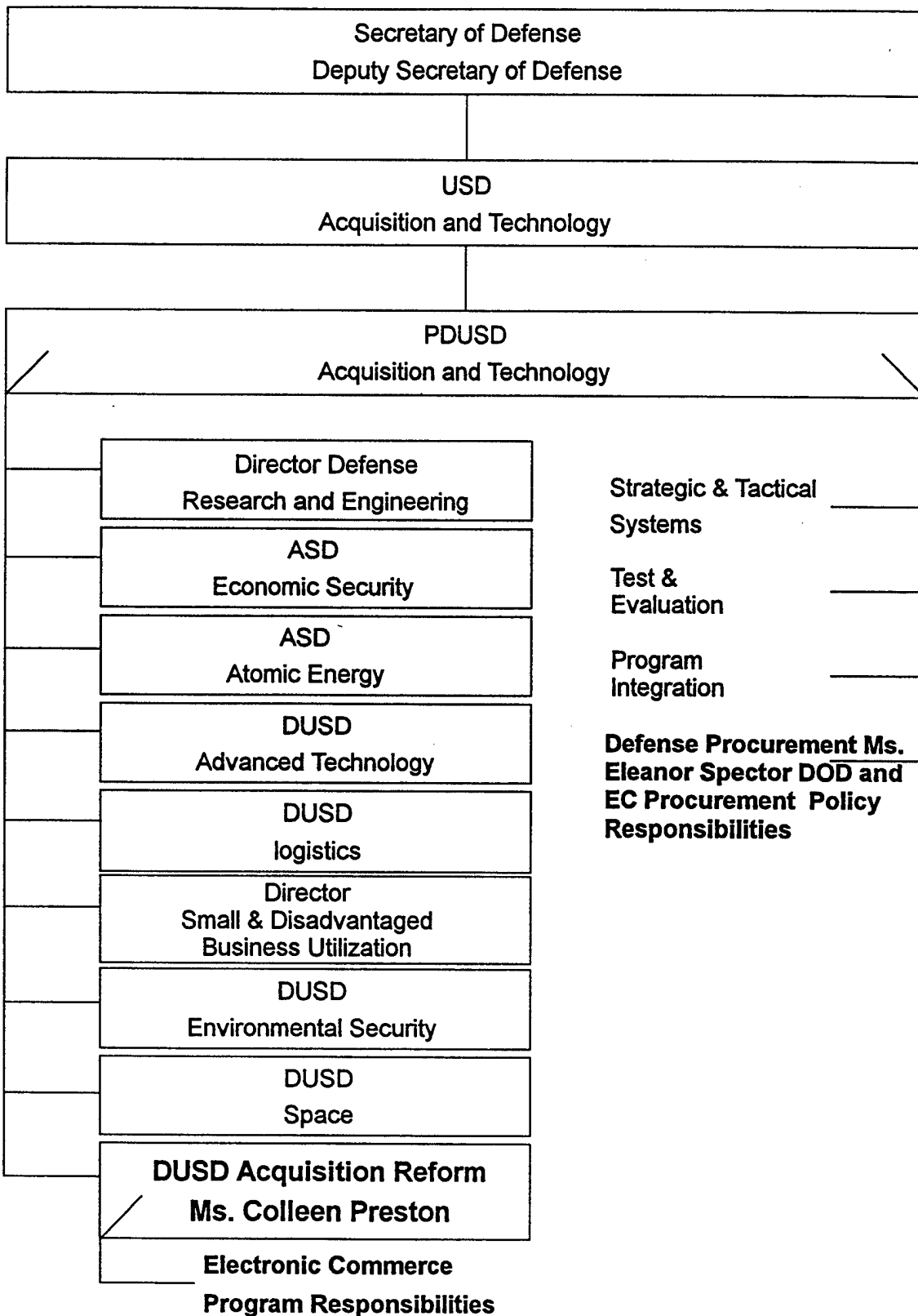


HQMC Contracts Division Functions

- Functional Responsibility for Field Contracting Officer
- Functional Manager for Marine Corps Procurement Automation

**APPENDIX D. USMC HCA CHAIN OF COMMAND AND EC
POLICY FLOW: SEPARATION BETWEEN
POLICY & IMPLEMENTATION EFFORTS**





**APPENDIX E. U.S. ARMY EC/EDI EXECUTIVE SUPPORT &
COMMITMENT DIRECTIVE**



DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
RESEARCH DEVELOPMENT AND ACQUISITION
103 ARMY PENTAGON
WASHINGTON DC 20310-0103



REPLY TO
ATTENTION OF

SARD-PC

17 JAN 1996

MEMORANDUM FOR HEADS OF CONTRACTING ACTIVITIES (HCA)

SUBJECT: Electronic Commerce in Contracting


A key initiative of the Federal Acquisition Streamlining Act (FASA) of 1994, was the directive to transition our contracting operations from a paper-based system to one which takes full advantage of Electronic Data Interchange (EDI). The Army potentially will save millions of dollars annually through the use of EDI in our contracting process. These dollars are significant as we attempt to modernize and sustain force structure. While many MACOMs have eagerly embraced this technology, Army-wide, much remains to be accomplished.

I am requesting that each HCA become personally involved in the deployment of EDI, utilization of EDI, and the Federal Acquisition Computer Network (FACNET) certification of their subordinate contracting offices. In addition, HCAs must pay particular attention to Command-wide class-exemptions and exemptions granted at the contracting officer level. Unless one of these two types of exemptions has been issued, ALL procurement actions between \$2500 and \$100K must be solicited through FACNET. These efforts should be monitored on a frequent basis. MACOMs which have not developed HCA level class-exemptions must complete this task as a condition of Interim FACNET certification. Several HCAs with Interim FACNET certified contracting offices have not completed this requirement. MACOM Commanders can expect that exemption policies will be audited by external agencies such as the General Accounting Office, the Department of Defense Inspector General, and DA Procurement Management Reviews. MACOMs failing to use FACNET as intended by FASA, run the risk of having their FACNET certification revoked, resulting in the loss of the \$100K Simplified Acquisition Threshold.

With approximately 135 Army contracting offices presently conducting electronic commerce via EDI, we have come a long way in a short period of time. With your management oversight, the Army can take full advantage of

the potential cost avoidance. Collectively, we must make every effort to effectively employ this enabling technology.

My point of contact is LTC James P. Walsh, DSN 225-0255/Commercial 703-695-0255.



Gilbert F. Decker
Assistant Secretary of the Army
(Research, Development and Acquisition)

Distribution

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20319-5050
Commander, U.S. Army Information Systems Command, ATTN:
ASCG, Ft. Huachuca, AZ 85613-5000

**APPENDIX F. ARPA LEGAL OPINION/APPROVAL OF
FAST ELECTRONIC COMMERCE BROKER-
ING SYSTEM**



ADVANCED RESEARCH PROJECTS AGENCY
3701 NORTH FAIRFAX DRIVE
ARLINGTON, VA 22203-1744



MEMORANDUM FOR THE COMPUTING SYSTEMS TECHNOLOGY OFFICE
ATTENTION: Deputy Director

SUBJECT: Legal Opinion -- FAST Electronic Commerce Brokering
System

This responds to your memorandum of October 11, 1994, which indicates that certain officials in Air Force Material Command believe that "legal and regulatory issues" are associated with use of the FAST brokering system and that "legislative relief" needs to be obtained before continuing use is made of FAST. Due to these comments you are concerned about the propriety of FAST and have asked me to review the Air Force objections and determine whether use of FAST is legal and appropriate. For the reasons stated below, I am of the opinion that the concerns stated by the Air Force are wholly without merit. There is no reason why ARPA (or for that matter the Air Force) should not continue to utilize the system. No legislative relief is necessary but legislation which could lead to expanded use of FAST was recently enacted.

BACKGROUND

A. The FAST Electronic Brokering System - General

Prior to your memorandum, my personal knowledge of FAST was limited to its use during development and fielding of the "ARPA Light" anti-fratricide device during the Gulf War. Without FAST that development could not have moved from concept, to test, to production, to delivery to the Gulf in a matter of a few weeks. ARPA won an Aviation Week Laurel Award as well as praise from the Joint Chiefs for that effort. The Office of Federal Procurement Policy later conducted a review of that procurement action and found it to be compliant with applicable law and regulations.

You advise that FAST is a leading edge research project in advanced electronic commerce services, developed at the Information Sciences Institute (ISI) of the University of Southern California (USC). By using computer networks to interconnect buyers and vendors, it enables a buyer to actively solicit quotations from multiple vendors and then to choose among these one for execution as an electronic data interchange (EDI) transaction. FAST is well known for its ability to find vendors of hard to find items, as well as to locate attractive prices for commodity items.

To be successful, FAST requires a pilot operational user community to stress the system's capabilities and to drive further refinements and improvements. To date, the partnership between

FAST and its users within the Air Force laboratory system has been an effective opportunity for technology transfer within the Department of Defense. The project will now be seriously impeded by the loss of this crucial user community due to an Air Force decision to discontinue use of FAST.

FAST is nothing more than a tool that provides information to buyers and executes buyer's instructions based on their commands and established preferences. The system can implement virtually any policy established by the using organization. The specific difficulty within the Air Force laboratories appears to have been the resistance of the on-site Contracting offices to delegate contracting authority to the laboratory personnel/buyers who participate as users of FAST. ISI personnel are not making contractual decisions on behalf of government personnel.

FAST is currently being used within the Army by the Department of Logistics at Ft. Huachuca. In this case, contracting authority has been delegated to the Army personnel who are users of the system. To insure that all regulatory and statutory requirements are met, the Directorate of Contracting has published detailed guidelines for Government customers of FAST both inside the Army as well as elsewhere within Defense. These guidelines clearly state that "Orders placed against FAST are initiated by Government personnel. Individuals placing such orders must either be appointed Ordering Officers, or be working under the direct authority and supervision of a Contracting Officer. It is the responsibility of the user activity to coordinate FAST acquisitions with their designated Contracting Office to ensure compliance with applicable Federal Acquisition Regulations, and supplements thereto, that govern the acquisition process." To insure proper oversight, FAST produces a detailed monthly acquisition report for review by the appropriate Ordering Officer who is monitoring the acquisition activity. Counsel at Ft. Huachuca has ruled that FAST, when used in this fashion, is compliant with Federal Acquisition Regulations.

B. Statutory/Regulatory Issues

In a letter dated August 12, 1994, HQ AFMC/PK, Brigadier General Malishenko states: "Since FAST substitutes a contractor's judgement for that of the government contracting officer (CO), it is an unlawful method of procuring supplies and services." The same letter also asserts that the "use of FAST raises many issues of a statutory nature...which would involve legislative review and approval to continue the system." This statement references an attachment which cites the Walsh-Healey Public Contracts Act, the Competition in Contracting Act, and Small Business Act (synopsis requirements and set asides). The comments in the attachment and the comments in the body of the letter concerning contracting-out inherently governmental functions are the legal and regulatory issues upon which HQ AFMC/ST (letter dated August 26, 1994) supported the decision to terminate Air Force use of the FAST system.

The comments in the above referenced attachment are quoted in full here:

1. Walsh-Healey Public Contracts Act. This act requires us to purchase from manufacturers or regular dealers, and the employees of these companies must be paid at least the minimum wages set by the Department of Labor. To purchase from an "electronic broker" would require an exemption from the Act because the broker would not qualify as a regular dealer or manufacturer. Requiring the broker to apply the Act to the vendors selected would still not comply because we are buying the items from, and paying, the broker, not the vendors.
2. Competition in Contracting Act (CICA). CICA requires us to compete purchases over \$2500. Directing all purchases to a broker would violate CICA, unless appropriate approvals are obtained. Two remotely possible exceptions to CICA are: 10 USC 2304 (c) (1) "only one responsible source" and 10 USC 2304 (c) (2) "unusual and compelling urgency". Neither could easily be applied to the instant case.
3. Small Business Act (synopsis requirements). Sole source actions over \$10,000 must be synopsised, effectively delaying the purchase by 21 days or more. Case-by-case waivers would be labor-intensive and would probably reduce the responsiveness of the system unacceptably. A periodic synopsis (i.e. every six months) of projected requirements might satisfy the intent, if not the letter of the Act. All respondents to the synopsis could then be considered for inclusion in the broker's system. This may not technically satisfy all of the Act's requirements since actual (vs. planned) requirements would not be individually synopsised.
4. Small Business Small Purchase Set-Asides. There is a requirement to reserve all purchases \$25,000 or less exclusively for small business concerns. The FAST vendor base contains both small and large businesses but can be coded to select only small businesses. However, if no quotations are received from small businesses, the set-aside must be dissolved by the contracting officer and the purchase made from a large business.

In a December 1993 letter HQ AFMC/PK stated its objections to FAST as follows:

- a. It is not an approved decentralized contracting technique;
- b. Buyers have not been delegated contracting authority nor have they been appointed as ordering officers;
- c. Procedures are not in place to insure compliance with regulatory and statutory requirements; and
- d. There is no training or oversight by local contracting offices.

That same letter provided for a six month phase-out of the FAST system within Air Force Material Command.

C. FAST System Benefits - Impact

Information from USC/ISI, Ft. Huachuca's contracting office and AFMC documents indicate the following.

Within the Air Force, Rome Laboratory and Wright Laboratory became FAST customers several years ago under an AFSC directive to use FAST to streamline local procurement. Robins AFB and Hill AFB started using FAST a year and a half ago. During FY 94, Rome Laboratory, Wright Laboratory and Robins AFB were FAST's three largest customers. They have cited documented speedups of up to 643% for FAST procurement compared to traditional Base Contracting procurement methods.

In July 1993, the Operational Contracting Division at HQ AFMC initiated a review of FAST to determine if its use should continue within AFMC. The AFMC review concluded that "FAST provides a streamlined, user friendly way for customers to purchase items..." Nonetheless the decision was made to terminate the system's use in AFMC.

Rome Laboratory, Wright Laboratory and FAST's customers at Robins AFB immediately responded with strong objections to HQ AFMC's recommendations. They voiced serious concern over not being able to support critical (mainly ARPA sponsored) research projects. Robins AFB, as well as Rome Laboratory and Wright Laboratory have repeatedly requested that the onsite buyers interacting with FAST be granted contracting authority. These requests have been denied by the onsite Contracting Offices. The FAST buyer at Hill AFB had contracting authority.

Rome Laboratory submitted an initiative under the Laboratory Quality Improvement Program along with a request to extend the Laboratory's use of the FAST system for small purchases. This was denied.

In summary, it appears that FAST has an excellent record of performance both as an acquisition support tool and as a computer networking research project. Termination of its use within Air Force Material Command will adversely affect the Air Force acquisition mission as well as ARPA's research project.

QUESTION PRESENTED

Do the legal and regulatory concerns raised by Air Force Material Command constitute a basis for terminating the use of the FAST Electronic Brokering System?

DISCUSSION

This is far too serious a matter for me to ascribe motives to the persons who have raised the issues being considered in this opinion. I am nonetheless struck by the impression that there are those in the Air Force contracting community who do not want FAST to be used and therefore have sought reasons why it cannot be used. With respect to the four objections stated in the December

1993 AFMC/PK letter quoted above, I note that all of them are within the control of AFMC/PK itself to remedy unless there are legal and regulatory violations that cannot possibly be corrected short of legislation. If that was the view of AFMC/PK then it should have terminated Air Force use of FAST immediately upon discovery of the illegality. The December 1993 letter states, however, "that a six months phase out period of FAST is appropriate." If there was no irreparable illegality those same six months could have been used to correct the other deficiencies noted in the letter. Ft. Kuschuca has implemented measures similar to those that the Air Force felt were needed.

Inherent Government Function. With respect to the allegation that the FAST system involves non-government personnel performing inherently governmental functions, this simply misconstrues the FAST function. FAST does not involve judgments over the government contracting process - which would indeed constitute an inherently governmental function. FAST is a tool. True it is highly sophisticated and uses advanced technology but qualitatively it is not fundamentally different from government contracting personnel reading a very large volume of catalogues or making numerous telephone or facsimile machine inquiries.

Walsh-Healey Public Contracts Act. The discussion of this statute quoted above omits two key points. First, the statute is not applicable to contract actions below \$10,000 (41 U.S.C. 35). Furthermore, the statute "shall not apply to purchases of such materials, supplies, articles or equipment as may usually be bought in the open market..." (41 U.S.C. 43). Thus, even assuming that the discussion of this statute contained in AFMC/PK letter is accurate, there are numerous opportunities to use the FAST system without violating the statute, specifically all purchases below \$10,000.

Competition In Contracting Act. The discussion of this statute is incorrect in that AFMC/PK states that CICA's competition requirements is applicable to purchases above \$2,500. In fact the threshold is \$25,000 (10 U.S.C. 2304 (g)). The discussion of exceptions to the full and open competition requirement of CICA is not applicable to purchases below \$25,000. The use of FAST could also constitute a market survey and provide factual information that would aid in justifying limitations on competition for purchases in excess of \$25,000.

Small Business Act (synopsis requirements). The discussion of this provision states: "sole source actions over \$10,000 must be synopsized..." That is not an adequate reading of the statute. The general synopsis requirement of the Small Business Act is \$25,000 (15 U.S.C. 637(a)(1)(A)(i)). In addition for actions over \$10,000 there is a synopsis requirement "if there is no reasonable expectation that at least two offers will be received..." (15 U.S.C. 637(e)(A)(1)(iii)). Thus, there is no CBD synopsis requirement for purchases under \$10,000 and, if FAST reveals two or more responsive and responsible offerors, there is no synopsis requirement for purchases under \$25,000. The delays and pitfalls suggested in the AFMC/PK analysis are not valid.

Small Business Set Asides. There is no impediment to the use of FAST caused by the requirement to set aside purchases below

\$25,000 for small businesses. As the AFMC/PK analysis states: "The FAST vendor base contains both small and large businesses but can be coded to select only small businesses. However, if no quotations are received from small businesses, the set aside must be dissolved by the contracting officer and the purchase made from a large business." Thus, FAST can help effectuate the policies of the Small Business Act.

All of the legal objections contained in the AFMC/PK analysis either misconstrue the facts, misstate the law, or discuss problems that, if they exist at all, are quite capable of being managed. In fact by delegating authority, providing guidelines and training, AFMC/PK could manage the use of the FAST system in a way which is both highly useful and efficient as well as legal and in compliance with applicable regulations.

With regard to legislative relief, it has to a significant extent already been made available. Section 7201 of the Federal Acquisition Streamlining Act of 1994 (S. 1587, 103d Congress, signed Oct. 13, 1994) amends the Walsh-Healey Act by deleting the terms "manufacturer" and "regular dealer" and substituting "supplier." This legislation was introduced in 1993 and was pending at the time that AFMC decisions were being made. The AFMC/ST letter which refers to "the substantial time and effort involved in obtaining legislative relief" is dated 26 August 1994. At that time the final conference agreement had already been reached and the Senate had voted to accept the conference report. When the House of Representatives voted on the conference report in September 1994, it passed unanimously. Apparently AFMC was completely unaware of the provisions of the most important piece of procurement legislation in the last forty years.

Other provisions of the streamlining Act such as "Title IV - Simplified Acquisition Threshold" will have a significant impact on acquisitions of less than \$100,000. Regulations authorized under that section may make the Walsh-Healey Act completely inapplicable to such procurements. Other provisions of the new law amend pertinent sections of the Small Business Act and the Competition in Contracting Act. While the final impact of these changes may not be fully known until the implementing regulations are issued, the prospect is that FAST will be able to be an even more useful tool under the recently enacted law.

CONCLUSION

Based on the foregoing analysis, it is my opinion that the concerns and objections raised by the Air Force concerning the FAST electronic brokering system are not valid as a matter of fact and law. There is no reason, based on the Air Force objections, for ARPA or other users of FAST to terminate such use.

It might be useful at some point to carefully analyze FAST utilization in light of legal and regulatory requirements to determine if modifications to the FAST system could increase its utility while complying with current legal requirements. Likewise, regulations to be issued governing simplified acquisition under the Federal Acquisition Streamlining Act of 1994 may increase the applicability of FAST. A report on FAST should be provided to the

group charged with writing the new regulations on commercial practices and simplified acquisitions so that they can accommodate the use of FAST to the maximum extent.

Do not hesitate to contact me if I can be of additional assistance.

Richard L. Dunn
General Counsel

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